

# Everyman's Encyclopædia

IN TWELVE VOLUMES

VOLUME SEVEN

Hase  
TO  
Jest-books

THE THIRD EDITION





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EVERYMAN'S ENCYCLOPÆDIA  
IN TWELVE VOLUMES**

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HASE—JEST-BOOKS**

**EDITED BY ATHELSTAN RIDGWAY, LL.B.**

THE THIRD EDITION

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**RETROCONVERTED**  
**B. C. S. C. L.**



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# ABBREVIATIONS

The titles of subjects, which are printed first in bold type, have been abbreviated within each article to the initial letter or letters.

<b>ac.</b> , acre(s).	<b>is.</b> , island(s).
<b>agric.</b> , agricultural.	<b>It.</b> , Italian.
<b>ambas.</b> , ambassador(s).	<b>Jap.</b> , Japanese.
<b>Amer.</b> , American.	<b>jour.</b> , journal.
<b>ant.</b> , ancient.	<b>Lat.</b> , Latin.
<b>ann.</b> , annual.	<b>lat.</b> , latitude.
<b>arron.</b> , arrondissement.	<b>lb.</b> , pound(s).
<b>A.-S.</b> , Anglo-Saxon.	<b>l. b.</b> , left bank.
<b>A.V.</b> , Authorised Version.	<b>long.</b> , longitude.
<b>b.</b> , born.	<b>m.</b> , mile(s).
<b>Biog. Dic.</b> , Biographical Dictionary.	<b>manuf.</b> , manufacture.
<b>bor.</b> , borough.	<b>min.</b> , minute(s).
<b>bp.</b> , birthplace.	<b>mrkt. tn.</b> , market town
<b>Brit.</b> , British.	<b>MS.</b> , manuscript.
<b>C.</b> , Centigrade.	<b>mt.</b> , mount ; mountain.
<b>c.</b> , about.	<b>N.</b> , north ; northern.
<b>cap.</b> , capital.	<b>N.T.</b> , New Testament.
<b>cf.</b> , compare.	<b>O.E.</b> , Old English.
<b>co.</b> , county.	<b>O.F.</b> , Old French.
<b>com.</b> , commune.	<b>O.T.</b> , Old Testament.
<b>cu. ft.</b> , cubic feet	<b>oz.</b> , ounce(s).
<b>d.</b> , died.	<b>par.</b> , parish.
<b>Dan.</b> , Danish.	<b>parl.</b> , parliamentary.
<b>dept.</b> , department	<b>pop.</b> , population.
<b>dist.</b> , district.	<b>prin.</b> , principal.
<b>div.</b> , division.	<b>prof.</b> , professor.
<b>E.</b> , east ; eastern	<b>prov.</b> , province, provincial.
<b>eccles.</b> , ecclesiastical.	<b>pub.</b> , published publication
<b>ed.</b> , edition ; edited.	<b>q.r.</b> , which see.
<b>e.g.</b> , for example.	<b>R.</b> , riv., river.
<b>Ency. Brit.</b> , Encyclopædia Britannica.	<b>r. b.</b> , right bank.
<b>Eng.</b> , English.	<b>Rom.</b> , Roman.
<b>estab.</b> , established : establish- ment.	<b>R.V.</b> , Revised Version.
<b>F.</b> , Fahrenheit.	<b>S.</b> , south ; southern
<b>f.</b> , flourished.	<b>sec.</b> , second(s).
<b>fort. tn.</b> , fortified town	<b>sev.</b> , several.
<b>Fr.</b> , French.	<b>Sp.</b> , Spanish.
<b>ft.</b> , feet.	<b>sp. gr.</b> , specific gravity.
<b>Ger.</b> , German.	<b>sq. m.</b> , square mile(s).
<b>Gk.</b> , Greek.	<b>temp.</b> , temperature.
<b>gov.</b> , government.	<b>ter.</b> , territory.
<b>Heb.</b> , Hebrew.	<b>tn.</b> , town.
<b>hist.</b> , history.	<b>trans.</b> , translated ; translation
<b>horticult.</b> , horticultural.	<b>trib.</b> , tributary.
<b>h.p.</b> , horse-power.	<b>univ.</b> , university.
<b>hr.</b> , hour.	<b>urb.</b> , urban.
<b>i.e.</b> , that is.	<b>vil.</b> , village.
<b>in.</b> , inch(es).	<b>vol.</b> , volume
<b>inhab.</b> , inhabitant(s).	<b>W.</b> , west ; western
	<b>Wm.</b> , William
	<b>yd.</b> , yard.

The article ABBREVIATIONS contains a list of those in general use.  
See also ABBREVIATION (music) and ELEMENTS (chemical symbols).



**Hase, Karl August von** (1800-90), Ger. theologian, b. at Steinbach in Saxony. In 1829 he was appointed prof. of philosophy at the Univ. of Leipzig, and prof. of theology at Jena in 1830. His best known works are *Die Leipziger Disputation* (1827) *Leben Jesu* (1829, Eng. trans. 1881), in which he anticipated the arguments put forward by Strauss; *Theologische Streit-schriften* (1834-37), *Die Tübinger Schule* (1856), *Hutterus Redivivus* (1883), *Lehrbuch der Kirchengeschichte* (1886, Eng. trans. 1895), *Die Beiden Erzbischöfe* (1839) and an ed. of *Libri Symbolici Ecclesiae Evangelicae*. See life by R. Buerkner 1900.

**Hasek, Jaroslav** (1883-1923), Czech writer, b. at Prague, author of *The Adventures of the Excellent Soldier Schwejk during the World War* (1921). See further under CZECHOSLOVAKIA—Literature.

**Hasselrigg, Sir Arthur** (also *Hesselrigg, Hazelrigg*), one of the five members whom Charles I. ordered to be arrested for high treason on Jan. 3, 1612. The others were Pym, Hampden, Hollis, and Strode. The Commons refused to give them up.

**Hashish, or Hashheesh**, Arabic name, meaning literally 'dried herb', for the various preparations obtained from the flowering tops of the Indian hemp plant (*Cannabis indica*). It is used as an intoxicant in sev. E. countries (called 'bhang' in India), and is either smoked, chewed, or drunk. It is valuable as a narcotic, and is sometimes employed in medicine as an anodyne. The Eng. word 'hashish' is probably derived from the Arabic 'hashshin', i.e. hemp-eaters, who committed great excesses when under the influence of hashish. See HEMP.

**Haskerland**, com. in the prov. of Friesland in the Netherlands. Pop. about 8000.

**Haslemere**, mkt. tn. and par. of England in the co. of Surrey in the Guildford div., 10 m. from Farnham, and 8 m. from Godalming. Near by is Aldworth House, Tennyson's last home. The tn. is situated in very picturesque surroundings, and is a favourite residential place. There is a Royal School for Naval and Marine Officers' daughters at H. Hind head Common with its celebrated Devil's Punch Bowl is quite near. Pop. 13,300.

**Haslingden**, mkt. tn. and municipal bor. of England in the co. of Lancashire. It is in the diocese of Manchester, and has two railway stations, Haslingden and Helmshore. It has a church dating from the thirteenth century. It manufs. cottons, silks, woollens. There are coal-mines in the vicinity. Pop. 15,700.

**Haemoneans**, see AMONEANS and MACYABRES.

**Haage**, tn. in Germany, prov. of Westphalia, noted as the seat of an important iron and steel industry, and manufs. scythes, etc. Pop. 25,000.

**Hassall, Arthur** (1833-1931), Eng. historian, b. at Bebbington, Cheshire; second son of Henry Burton H. Educated at Uppingham and Oxford. In 1880 he became a lecturer and tutor in hist. at Keble College, and in 1883 at Christ Church. His works include: *Life of Rottingbroke* (Statesmen Series, 1889), *Louis XIV.* (Heroes of the Nations, 1895), *The Making of the British Empire* (1896), *A Handbook of European History* (1897), *The Balance of Power* (1896, 1898, in the Periods of European History Series, of which he was editor), *A Class Book of English History* (1901), *History of France* (1901), *The French People* (1901), *Mazarin*, (Foreign Statesmen Series 1903), *History of France* (Temple Primers, 1903), *The Tudor Dynasty* (1904), *A Brief Survey of European History* (1906), *The Expansion of Great Britain* (1907), *Castlereagh* (1908), *The Great Rebellion* (1909), *Modern Europe* (1910), *The Great Napoleon* (1911), *History of British Foreign Policy* (1912), *France, Medieval and Modern* (1918), *A British History chronologically arranged from 55 B.C.* (1919).

**Hassan**, dist. of Mysore state, India. The chief tn. is H. in the centre of the dist. H. is bounded on the S. partly by the state of Coorg, and on the S.W. by the Madras dist. of S. Kanara. Its area is 2547 sq. m. The dist. is divided into two portions, the Malnad, or hill-country, including some of the highest ranges of the W. Ghats, and the Maldan, or plain country, in the direction of Mysore to the S. Staple cultivation, dry and wet crops. Pop. 600,000.

**Hassan and Hussein**, sons of Ali and Mohammed's daughter Fatima:

**Hassan** (623-69) succeeded his father as Caliph at Kufa in 660, but in a few months retired in favour of his rival Mouweeyah, and went to live at Medina, where he attained a great reputation for piety. He is said to have been poisoned by one of his wives.

**Hussein, or Hosein** (629-80), succeeded his brother Hassan as Imam of the Shiites, and claimed the caliphate also. In attempting to depose Mouweeyah, he was killed by the latter's troops at Kerbela. The two brothers are held in the greatest veneration by the Shiites, who hold an ann. festival in their honour, at which their deaths are dramatically represented. See G. Weil, *Geschichte der Chalifen*, 1815; Sir L. Pelly, *The Miracle-Play of Hasan and Hosein*, 1879; and M. Arnold 'A Persian Passion-Play' in *Essays in Criticism*, 1882.

**Hasselt** (*Hasselholt*, hazel grove), chief tn. of the prov. of Limbourg in Belgium. It is 16 m. from Maastricht by rail. It has manufs. of linen fabrics, tobacco, and gin-distilleries. Chicory is largely cultivated in the surrounding dist. The

Belgians were defeated here by the Dutch in 1831. Pop. 29,200.

**Hassler** (or **Häslar**), **Hans Leo** (1564-1612), Ger. composer, b. at Nuremberg, the most famous member of a distinguished musical family. He began his career as an organist, his father being his teacher; he studied in Venice under **Andrea Gabrieli**, composer of choir and organ music. With **Michael Praetorius** (real name **Schulz**; 1571-1621) a composer, and author of a valuable compendium of the musical knowledge of the time entitled *Syntagma musicum* (3 vols., 1615-19), he is regarded as a master in the period of Ger. renaissance. His chief works are church music and songs. He wrote the familiar Passion chorale, *O Haupt voll Blut und Wunden*, and a number of well-known chorale melodies in the motet form. Most of his organ pieces, motets and madrigals, which are important in the hist. of Ger. music, have been republished in modern times.

**Hastinapur**, ruined city of India, in the **Meerut** dist., United Provs., on banks of former bed of Ganges. At one time it was the cap. of the **Pandava** kingdom.

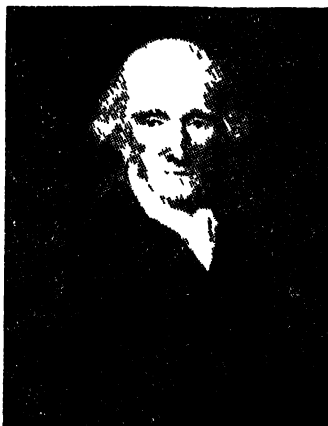
**Hastings**, **Francis Rawdon** (1754-1826), first **Marquis** (1817), a Brit. soldier and administrator, b. in Co. Down, Ireland, the son of Sir **John Rawdon** of **Moira**: later **Earl of Moira**: educated at **Harrow** and **Oxford**, and entered the army. From 1775-82 he was on service in the Amer. war, fighting at **Bunkers Hill**, **Brooklyn**, **White Plains**, **Camden**, **Charleston**, etc., and was created a peer, as **Baron Rawdon**, on his return in 1783. In 1794 he fought against the Fr. in **Flanders**; was appointed commander-in-chief in **Scotland**, 1803; became master-general of the ordnance, 1806; and governor-general of **India** in 1813. The chief events of his administration were the wars against **Nepal** (1814-16) and the **Mahrattas** and **Pindaris** (1817-18). He retired in 1823, and was appointed governor of **Malta** in 1824.

**Hastings**, **Sir Patrick Gardiner** (b. 1881), Eng. lawyer. Elected **Labour M.P.** for **Wallsend**, 1922, and again in 1924, when he became **Attorney-general** for the first **Labour** gov. in **England**. Publications: (plays), *The River* (1925), *Scotch Mist* (1926), and *Eacort* (1942), and *The Autobiography of Patrick Hastings* (1948).

**Hastings**, **Selina**, see **HUNTINGDON**, **SELINA**, **COUNTRESS OF**.

**Hastings**, **Warren** (1732-1818), first governor-general of **India**, went out in 1750 to **Calcutta**, where the influence of his uncle had secured for him a cadetship in the **E. India Company's** service. He rose rapidly, and became a person of such considerable importance that eleven years after his arrival in the country he, having already filled other posts with credit, was appointed a member of the **Calcutta** council. In 1764 he returned to **England**. Unlike most of his colleagues, he had made no attempt to amass a private income, and had nothing but his savings to live upon, and these were so inconsiderable that they were already ex-

hausted when, in 1769, he accepted the **Company's** offer to go out to **Madras** as second in council. Two years later he was promoted to the governorship of **Bengal**. He now fulfilled the hopes of the directors at home, and proved himself a wise and far-seeing administrator. He instituted reforms, both in the gov. of the prov. and in the law courts, that were taken as models by his successors. He upheld treaty rights and removed abuses, but was vigorously opposed by some members of his council, his most bitter opponent being (Sir) **Philip Francis**, whom in 1780 he wounded in a duel. In 1785,



WARREN HASTINGS

having done magnificent work, he resigned his office and returned to **England**. At once an agitation was set on foot by **Francis** and others, who enlisted the support of **Burke**, and he was impeached in 1783 for corruption and cruelty. The trial dragged on for seven years, when he was acquitted on all counts. His expenses in connection with it amounted to £70,000, his entire fortune. Thereupon the **E. India Company**, very rightly, but to the great indignation of **Burke**, granted him a handsome pension, which enabled him to fulfil his long-cherished dream of repurchasing the family estate of **Daylesford**. In later days, largely owing to the kindly influence of the **Prince Regent** (afterwards **George IV.**), he was reinstated in popular opinion, though his impeachment was never officially reversed. **Mill**, the historian of **India**, declared that 'few men would be found whose character would present a higher claim to indulgence than his,' and this view is now generally accepted. There are biographies by **G. E. Gleig**, 1841, and by **L. J. Trotter**, 1874. See **E. Gilliat**, *Heroes of Modern India*, 1911; **M. E. Monckton-Jones**, *Warren Hastings in Bengal*, 1918;



H. Dodwell, *Letters to Sir John Macpherson*, 1921; P. Moon, *Warren Hastings and British India*, 1948.

Hastings, watering place, parl., municipal, and co. bor. in Sussex, England, 33 m. E. of Brighton and 62 m. S.S.E. of London by rail. On the S. it is open to the Eng. Channel, but elsewhere surrounded by high cliffs. It has an old and new tn., the former—described as the 'new burgh' in the Domesday Book—between the E. and W. Hills, being chiefly inhabited by fishermen. A fine promenade runs for 3 m. along the sea front to St. Leonards-on-Sea, which is within the bor. Apart from catering for visitors, fishing is the chief industry, and there is a fish mkt. Being sheltered by the hills inland from easterly and northerly winds, H. is a well-known resort for those suffering from pulmonary complaints, in the winter and spring. The climate is dry, mild, and salubrious. There are sev. public gardens, the chief of which is the extensive Alexandra Park and the tn. has 410 ac. of public open spaces. Among the centres of entertainment and recreation are the White Rock Pavilion, the White Rock Gardens, and the bathing pool. Some 6 m. from H. is the great Abbey, St. Martin's of Battle, which Wm. I., to commemorate his victory at the 'Battle of Hastings,' built on Senlac Hill, the actual site of the battle. 14 m. from H. is Bodiam Castle, a splendid example of a medieval fortress, with round towers, gateway and moat. It was presented to the nation by the Marquess Curzon in 1925. 10 m. from H. is Pevensey Castle containing three fortresses—the coast guard fortress of Anderida, a stone keep built by Robert of Mortain and a fort round the keep built in the thirteenth century. It derives its name from Hæst (or Hæsten), the intrepid Dane who 150 years ago founded the *new* or settlement which, as Hastings, rose to eminence as a port during Saxon times and, in the reign of Athelstan, boasted not only a busy harbour but a Mint. It was the chief of the five ports which were amalgamated by Edward the Confessor into the Confederation of the Cinque Ports. In the Norman period it was the chosen port of embarkation and return for the Norman court when the monarchs visited their continental domains. The great castle founded by Wm. the Conqueror, the ruins of which dominate the tn. to-day, was the scene of many royal ceremonies. After John lost Normandy in 1204 H. declined rapidly. The harbour was gradually silted up by the 'eastward drift' of the sea—a process coincident with the building of bigger and yet bigger ships drawing more water. By the fourteenth century H. was little more than a fishing vil., and its decline was accelerated in the same century through being four times sacked by marauding Fr. In its heyday H. contributed twenty ships fully manned to the Cinque Ports navy. In 1400 its contribution was only three. There was a brief revival of former glory in the days of Elizabeth when, in 1588, H. again furnished its full

complement of twenty ships to help fight the Armada. As a reward the queen gave the tn. its Charter and the Bailiff of H. was given the title of mayor. Attempts to reconstruct the harbour, however, failed, and H. soon sank again into obscurity. Its next appearance in the pages of hist. was during the eighteenth century—as a notorious centre for smuggling. During the latter half of the eighteenth century, the tn.'s present reputation as a watering place was founded—a development more or less concurrent with that of Brighton. A Dr. Bailey, supported by John Collier, mayor of Hastings, publicised the air of the tn. as especially favourable for pulmonary sufferers. The H. of the sixteenth and seventeenth centuries was practically confined to what is to-day called the 'Old Town' but during the last years of the eighteenth century and the early years of the nineteenth the tn. rapidly extended beyond the W. Hill, and such fashionable suburbs as George Street, Pelham Place, etc., came into being. In 1827 Decimus Burton, the architect, founded St. Leonards to the W. of the tn., soon, under royal patronage, to become the most fashionable resort in the country. St. Leonards and H. gradually developed into the composite whole which is now the co. bor. of H. with a resident pop. of 65,000.

H. and St. Leonards declined somewhat during the 'nineties and the first decade of the present century owing to lack of enterprise; but between the two World Wars, over £1,000,000 was spent in improving the attractions and amenities of the tn. Then came the Second World War and H. from 1940 onwards found itself in the front line. It suffered 87 raids: 550 H.E. bombs and 15 V-1 rockets burst in the bor. The old parish church of St. Leonard's was completely destroyed, and the Church-in-the-Wood, associated with Charles Lamb, was damaged. Nearly 16,000 properties were destroyed or damaged—more than two-thirds of the bor.'s total. The pop. at its lowest ebb, fell to 15,000. The whole front was, however, transformed into a tremendously strong defence line. In 1944, evacuees returned in fairly large numbers, and in 1945 the pop. had reached 44,000. Between May 1945 and May 1948, 21,000 people were re-housed and the pop. practically re-established at its pre-war level.

**Hastings:** (1) Bor. of New Zealand, N. Island, in Hawkes Bay co., 11 m. S.S.W. of Napier. Its industries are of an agric. nature and there is a canning factory, the largest in New Zealand. Pop. 22,000. (2) City of Nebraska, U.S.A., in Adams co. It has an altitude of 1917 ft., and is 130 m. W.S.W. of Omaha. It is served by four railways and is a shipping centre for grain and live stock. It is the seat of Hastings College and a Catholic Academy. Pop. 15,100. (3) City in Michigan, U.S.A., cap. of Barry co., on Michigan Central, and the Chicago, Kalamazoo, and Saginaw railways. Pop. 5000.

**Hastings, Battle of**, the usual name given to the great battle at Senlac, near



**Hastings**, where Wm, duke of Normandy, defeated the Eng. under Harold in 1066. The battle took place on a hill, to which a later chronicler gave the name of Senlac, about 6 m. from Hastings. On its summit was firmly posted Harold's force—the Normans being ranged in three divs., the centre one of which was commanded by the duke himself. The Normans were repeatedly driven back by the Eng., but at length, by a feigned flight, the latter were drawn from their stockade, and routed.

**Hastings Beds or Sands**, part of the Lower Cretaceous series and a lower div. of the Wealden beds. They vary in thickness from 500 to 1000 ft., and consist mainly of sand and sand-stone with subordinate layers of clay. They have been deposited in shallow fresh water and fine specimens of ripple marks are often to be seen in the sand. The strata, which differ only slightly from those of the overlying Weald clay, are highly fossiliferous and contain numerous saurian reptiles and the remains of sea chelonians, besides the remarkable *Ichthyosaurus* and other fish belonging to the ganoid or placoid orders.

**Haswell**, tn. in the co. of Durham, England, 6 m. E. of Durham. Pop. 6000.

**Hat**, covering for the head like all articles of apparel, has a hist., and its very interest is to trace its gradual

evolution from earliest times in the simple close-fitting cap to the many elaborate structures supplied by the demands of a twentieth century civilisation. The word *hat* comes from the A. S. *hæt*, and Ger. *Hut*, hat. The A. S. *hæt* consisted of a woollen cap, and was worn by the higher class of the A. S. But centuries before this time caps or coverings for the head were worn amongst the Oriental nations, when they had a certain religious significance, as in the case of the 'pilos' worn by the Jewish levitical priest. It is conjectured that the oldest head covering was the circular close-fitting cap, either plain or braided, which was worn by captives from Palestine in Assyria, and which also appeared on the heads of various duties among the heathen tribes. There were two kinds of headcovering worn by the Greeks in early times, the 'pilos' and the 'petasus'. The pilos had no brim, whilst the petasus was made of felt, and had a wide brim to protect the wearer from the rays of the sun. The Eng. felt *H* may be said to be the direct descendant of the Grk. petasus, but did not come into vogue in England till the year 1510. At the time of the Norman conquest the Phrygian cap flat bonnet, and brimmed *H* were worn. With the advance of centuries new fashions crept in, adopted from intercourse with other nations. This is especially noticeable in

1. Br. or Ape Hat (Slim)	4. Fencer's Hat	14th Cent	47. Cocked Hat	17-18
2. Br. or Ape Hat (Wool)	5. Country Hat	15th Cent	48. Lady's Cap	18th Cent
3. Egyptian Hat	6. Country Hat	15th Cent	49. Lady's Hat	18th Cent
3. Egyptian Hat	7. Country Hat	15th Cent	50. Lady's Hat	18th Cent
4. Egyptian Hat	8. Country Hat	15th Cent	51. Lady's Hat	18th Cent
5. Egyptian Hat	9. Country Hat	15th Cent	52. Lady's Hat	18th Cent
6. Egyptian Hat	10. Country Hat	15th Cent	53. Lady's Hat	18th Cent
7. Egyptian Hat	11. Country Hat	15th Cent	54. Lady's Hat	18th Cent
8. Egyptian Hat	12. Country Hat	15th Cent	55. Lady's Hat	18th Cent
9. Egyptian Hat	13. Country Hat	15th Cent	56. Lady's Hat	18th Cent
10. Egyptian Hat	14. Country Hat	15th Cent	57. Lady's Hat	18th Cent
11. Egyptian Hat	15. Country Hat	15th Cent	58. Lady's Hat	18th Cent
12. Egyptian Hat	16. Country Hat	15th Cent	59. Lady's Hat	18th Cent
13. Egyptian Hat	17. Country Hat	15th Cent	60. Lady's Hat	18th Cent
14. Egyptian Hat	18. Country Hat	15th Cent	61. Lady's Hat	18th Cent
15. Egyptian Hat	19. Country Hat	15th Cent	62. Lady's Hat	18th Cent
16. Egyptian Hat	20. Country Hat	15th Cent	63. Lady's Hat	18th Cent
17. Egyptian Hat	21. Country Hat	15th Cent	64. Lady's Hat	18th Cent
18. Egyptian Hat	22. Country Hat	15th Cent	65. Lady's Hat	18th Cent
19. Egyptian Hat	23. Country Hat	15th Cent	66. Lady's Hat	18th Cent
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23. Egyptian Hat	27. Country Hat	15th Cent	70. Lady's Hat	18th Cent
24. Egyptian Hat	28. Country Hat	15th Cent	71. Lady's Hat	18th Cent
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41. Egyptian Hat	45. Country Hat	15th Cent	88. Lady's Hat	18th Cent
42. Egyptian Hat	46. Country Hat	15th Cent	89. Lady's Hat	18th Cent
43. Egyptian Hat	47. Country Hat	15th Cent	90. Lady's Hat	18th Cent
44. Egyptian Hat	48. Country Hat	15th Cent	91. Lady's Hat	18th Cent
45. Egyptian Hat	49. Country Hat	15th Cent	92. Lady's Hat	18th Cent
46. Egyptian Hat	50. Country Hat	15th Cent	93. Lady's Hat	18th Cent
47. Egyptian Hat	51. Country Hat	15th Cent	94. Lady's Hat	18th Cent
48. Egyptian Hat	52. Country Hat	15th Cent	95. Lady's Hat	18th Cent
49. Egyptian Hat	53. Country Hat	15th Cent	96. Lady's Hat	18th Cent
50. Egyptian Hat	54. Country Hat	15th Cent	97. Lady's Hat	18th Cent
51. Egyptian Hat	55. Country Hat	15th Cent	98. Lady's Hat	18th Cent
52. Egyptian Hat	56. Country Hat	15th Cent	99. Lady's Hat	18th Cent
53. Egyptian Hat	57. Country Hat	15th Cent	100. Lady's Hat	18th Cent

Tudor times, where we meet with wide Hs. crowned with plumes and feathers, and with low-crowned caps with upturned brims. Beaver felts in many shapes came into vogue in Queen Elizabeth's reign, and were the common form of head covering for three centuries. That the H. has played its part in the making of hist. is evident from the fact that in the Civil war in Charles I.'s reign, the distinguishing feature of the Roundheads or Puritans was the high-steepled H. of plain felt, whilst the Cavaliers' head-covering was adorned with feathers. A century later the three-cornered cocked H. became the prevailing fashion, owing, no doubt, to the necessity of looping up the extravagant width of the brim. At one time felt Hs. were manufd. exclusively of beaver-fur, but the scarcity of this animal made it necessary to use other materials such as fur, a mixture of fur and wool or wool only. The fur or hair of rabbits, beaver, musk-rat, and camel was used for the finer Hs., whilst sheep's wool was used for the inferior felted Hs. The cheapest kinds of felt were also made with wool mixed with cotton and other vegetable fibres; in this case they were not really felted, but cemented by varnish which helped to hold together the fibres and to stiffen the H. body. The manuf. of the silk H., a stiff body with a covering of a plush of silk, almost universally worn by men of the upper and middle classes during the Victorian and Edwardian eras, began early in the nineteenth century in England. It was invented in Florence about 1760, but the fashion was not accepted till half-a-century later. Its manuf. was not introduced into France till about 1825 and its development has taken place entirely since that date. Now, after a century-and-a-half, the silk tite, or top-hat, has gradually gone out of use except for ceremonial occasions. In the days before the Second World War grey top-hats were worn at Ascot and at other fashionable events. The folding, or collapsible opera-hat, made of dull material, was used with evening dress for theatre-going etc. in the early days of the century. Before the late war the blocked black felt homburg hat, known as the 'Anthony Eden' was worn with evening dress by younger men; and also very considerably by day as well, with tin. clothes. For golf and walking rather large tweed caps, often with check pattern, were affected in the thirties (a fashion sponsored by the duke of Windsor, as was the wearing of the small Basque beret). Berets continue to be worn by men for country pursuits, often those made familiar during the war years—the airborne and tank corps berets. The hard felt bowler hat, worn very widely in the early part of the century, has gone almost completely out of fashion and has been superseded by the soft felt hat, or the blocked homburg. The agric. worker or farm labourer continues to wear a cap when working, often of a small, old-fashioned type, although the average young man walking in the country goes hatless.

The shapes and sizes of women's hats

change almost from season to season. For the last few years the tendency has been for hats to be worn well to the back of the head; small round caps, felt bonnet shaped hats, large cartwheel shapes. Trimmings are varied—veiling, ribbon loops and bows, flowers of all descriptions, and now feathers, have been introduced in an attempt to soften the rather severe plain styles which were worn during the 1939-45 war years, if indeed hats were worn at all. During the war years most women, at any rate the younger women, went hatless and instead of buying new hats as they had done in the past went in for elaborate and varied hair styles. It was quite a common and hitherto unusual sight to see smart and hatless women in the West-End of London. Those who wished to have their heads partially covered used to twist scarves round their head to form a sort of bandeau, leaving the crown of the head uncovered, or tied triangular scarves under the chin in peasant fashion: this style persisted and became almost a uniform in many parts of the country, probably because it is practical and tidy in all weathers. The difficulty of buying Hs. and the resulting practice of going hatless resulted in a relaxation in many churches of the custom of admitting women only when their heads were covered. Light weight felts are taking the place of straw hats for summer wear.

**Hatay**, Turkish name for the Sanjak of Alexandretta (q.v.).

**Hatfield**, or **Bishop's Hatfield**, mkt. tn. of Hertfordshire, England, on the Len, 17½ m. from London by rail and 6½ m. W.S.W. of Hertford. Apart from Hatfield House (q.v.), there are the ruins of a palace, once the residence of the bishops of Ely. Pop. 7000.

**Hatfield**, vil. of Yorkshire (W. Riding), England, on the Don, about 7 m. from Doncaster. With the opening of coal-mines the vil. has become a prosperous colliery centre. Hatfield Chase, the dist. around the vil., was once a forest and hunting ground of kings. This forest lay between the rivs. Don, Idle, and Thorne. A great part of it was marsh, and in 1626 it was drained by Dutch engineers.

**Hatfield Forest**, 3 m. E. of Bishop's Stortford, Essex, with 1049 acs. of rolling country and some pine timber. It was part of the Royal Forest of Essex maintained from Tudor times till 1915. It includes an ant. camp at Portinbury Hills, and a lake for boating and fishing.

**Hatfield House**, Hertfordshire residence of the marquess of Salisbury and one of the finest Jacobean houses in England. Stands in a park some 10 m. in circumference. It consists to-day of three wings, a main north wing, with the other two projecting southwards from its E. and W. ends, and the remains of the Old Palace. The Old Palace was built about 1496 by bishop Morton of Ely. The splendid hall which now remains is only a portion of the original building. The palace passed eventually to the Crown and Queen Elizabeth spent much of her childhood there. In James I.'s reign

H. H. was given to Robert Cecil, first earl of Salisbury, in exchange for Theobalds. Two wings of the palace were then pulled down and the materials used for the foundations of the house which was built between 1607 and 1611, with Robert Lynnhage as architect. The features of the house are the lofty marble hall, which contains the original panelling, a finely-carved musicians' gallery, and a number of portraits, including two of Queen Elizabeth. There is a third portrait (by Zuccaro) of the queen, at the foot of the grand staircase, with its gracefully carved newel posts topped with cherubs and heraldic animals. Near the head of these stairs hangs one of the very earliest English sporting paintings—the picture of Queen Elizabeth's white horse and its groom dated 1591. In the long gallery, which runs above the marble dining hall, is a carved oak cupboard containing Elizabeth's genealogical tree, tracing her ancestry back to Adam. In James I.'s drawing-room so called from the statue of him above the fireplace, are family portraits by Romney, Reynolds and others, and a fine Wilkie portrait of the duke of Wellington. All along the S. side of the first-floor runs the panelled Long Gallery; and from the windows is a fine view of the formal garden and maze. See J. S. Brewer, *English Studies*, 1881.

Hathaway, Anne (1556-1623), wife of Wm. Shakespeare. She was probably Agnes, daughter of Richard Hathaway, of Shottery, near Stratford-on-Avon, where the Hathaways' cottage still stands. She was married in 1582, about six months before the birth of her daughter Susannah, May, 1583. Her only other children, Judith and Hamnet (twins), were born 1585. Hamnet died in 1596. Under her husband's will, Anne took only his second-best bedstead.

Hathersage, vil. of Derbyshire, about 34 m. from Manchester and 161 m. from London, on the Midland Region railway. Around the vil. is some of the finest of the Derbyshire scenery. Little John, henchman of Robin Hood, is traditionally supposed to have been buried in the churchyard. Pins and needles are made here. Some 3 m. S. of H. is Froggatt Wood, purchased in 1939 by the Sheffield and Peak Dist. Branch of the Council for the Preservation of Rural England.

Hathor, see ATHOR.

Hathras, tn. of India in the United Provs. An important commercial centre. Pop. 40,000.

Hats and Caps, name given to two political parties in Sweden, which existed for a period of thirty-five years. The Hats, under Tessin, were in power in 1738, but were ousted by the Caps twenty-seven years later. The Caps then reigned for three years, from 1766 to 1769, when they had to make way again for the Hats. The Caps reconquered in 1771, but both parties were abolished in 1772.

Hathshesu, or Hatshepsut, queen of the eighteenth Egyptian dynasty, daughter of Thothmes I. and sole heiress to the Egyptian throne. For fifteen years she

reigned in Egypt as regent for her nephew, Thothmes III., governing well and energetically. She was instrumental in building the temple of Deir El-Bahari at Thebes, as well as many other monuments.

Hatsili, see NIKKO.

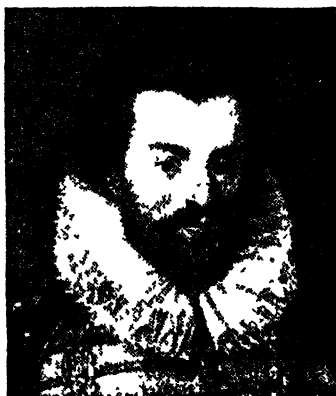
Hatteras, Cape, in N. Carolina, U.S.A., at the end of a long sandbank or is. separated by Pamlico Sound from the mainland. Violent storms often occur, producing a heavy sea, which makes the inlet dangerous to navigators.

Hatteria Punctata, see SPHENODON PUNCTATUS.

Hattiesburg, cap. of Perry co., Missouri, U.S.A. It has foundries, cottonseed oil mills, machine works, etc. Pop. 21,000.

Hatto I., archbishop of Mainz, came of a Swabian family, and obtained his archbishopric under Arnulf, a Ger. king, in 891. He was so popular with this monarch that he received the nickname of 'the heart of the king.' Upon the death of Arnulf, in 899, H. was appointed regent of Germany and guardian of the young king Louis. He exercised his power in a very arbitrary way, and was guilty of many crimes in the course of his career. This, no doubt, accounts for the legend of his being thrown into the crater of Mount Etna. He died in 913.

Hatto II., was archbishop of Mainz from 968-970; his name is associated with the legend of the Mouse Tower at Bingen, where he is reported to have been devoured by mice.



SIR CHRISTOPHER HATTON

Hatton, Sir Christopher (1540-1591), Eng. statesman and lord chancellor, b. at Holdenby. Was the reputed favourite courtier of Queen Elizabeth, through whose influence he became lord chancellor in 1587—a remarkable appointment in view of the fact that he was not a professional lawyer. Very little is known of his career which is what might be

expected in the case of a man whose success was due chiefly to his social qualities. He was educated at St. Mary's Hall, Oxford, and kept terms at the Inner Temple; but instead of following the law, he played the courtier, and, it is said, first attracted the queen's attention by his dancing at a masque. In J. O. Campbell's *Lives of the Lord Chancellors* (1868), he is described as a 'gay young cavalier, never called to the Bar, and chiefly famed for his handsome person, and his skill in dancing.' He appears, however, to have had sufficient natural capacity to acquit himself without disaster on the Woolsack; and sev. legal treatises, such as *A Treatise concerning Statutes or Acts of Parliament*, are ascribed, though not by lawyers, to him; and some attribute to him the authorship of the fourth act in the tragedy of *Tancred and Sigismunda*. His death was the result, according to some historians, of 'a broken heart' through the queen's demanding payment of a debt which he was unable to meet. See N. Harris Nicholas, *Life and Times of Sir Christopher Hatton*, 1847.

**Hatton, John Lipstrot** (1809-86), Eng. musical composer, b. at Liverpool. After holding many appointments as organist in Liverpool, he came to London in 1832, ten years later he was appointed conductor of Drury Lane Theatre, where his own operetta, *Queen of the Thames*, was produced. Some years later he was the accompanist of the St. James's Hall Ballad Concerts. He also composed the songs, *Goodnight Beloved*, *Sunon the Cellarer*, and *To Anthea*.

**Hat-trick**, in cricket, the name given to the feat performed by a bowler who takes three wickets with three successive balls, not necessarily in the same over. The term may have originated from the practice of giving hats to successful sportsmen, notably wrestlers, but is more likely to have come from the handing-round among the spectators of a hat for the purpose of making a collection of money for the player who has shown his prowess.

**Hattushash** (modern Bogaz Koy), cap. of Hittite (q.v.) empire.

**Hatvan**, tn. of Hungary, 30 m. E.N.E. of Budapest, with a large castle. Pop. 9,000.

**Hatzfeld**, see ZSOMBOLYA.

**Hauberk**, see under ARMOUR.

**Hauch, Johannes Carsten** (1790-1872), Dan. poet and dramatist, b. at Frederikshald, Norway, of Dan. parents. In 1816 he became prof. of Scandinavian languages at Kiel; in 1848 returned to Copenhagen, and from 1858-60 was director of the Dan. National Theatre. His works include collections of *Poems* (1842), and of *Lyrical Poems and Romances* (1861), *Valdemar Sejr* (1862, an historical epic), and some very fine tragedies produced between 1841 and 1866, including *Scend Grathe* (1841). *The Sisters at Kinnelulle*, *Marshal Stig* (1850), *Honour Lost and Won*, *Tycho Brahe's Youth*, *The King's Favourite*, and *Henry of Navarre*. He was one of the group of romantics around Oehlenschläger.

**Hauß, Wilhelm** (1802-27), Ger. author, b. at Stuttgart. In 1826 he produced *Lichtenstein*, an historical novel in the

tradition of Sir Walter Scott, which became very popular. His other work includes: *Mitteilungen aus den Memoiren des Sntan* (1826), *Hellerin vom Pont des Arts* (1826), *Phantasien im Bremer Kaskeller* (1827), and *Marchenulmanach auf das Jahr 1826* (1826), and some short poems. See Tidemann, *Hauß in Bremen*, 1929.

**Haug, Martin** (1826-76), Sanskritist, entered the univ. of Tübingen in 1848, where he studied the Oriental languages. He went to India in 1859 as prof. of Sanskrit at Poona. Besides writing *Essays on the Sacred Language*, *Writings*, and *Religion of the Parsees* (1862), he pub. valuable material for all students of the literatures of anc. India and Persia.

**Haugesund**, seaport in Norway, 36 m. N.W. of the tn. of Stavanger. Its harbour is from 17 to 50 ft. in depth. It has important fisheries. Pop. 18,000.

**Haughton, William** (c. 1575-1605), Eng. dramatic writer of the seventeenth century who collaborated in many plays with Henry Cheette and Thomas Dekker. Philip Henslowe mentions in his diary how he helped to release H. from 'the Clink' by a loan of ten shillings. He is supposed to have written the greater part of *The Pleasant Comodie of Patient Grissill* (1603).

**Haulbowline**, is. S. of co. Cork, Ireland, situated in Cork harbour, opposite Queens-town. It has a convict station, artillery barracks, and various ordnance works.

**HauMt-as-Suk**, see under JERBA.

**Hauptmann, Gerhardt** (1862-1946), Ger. dramatist, novelist, and poet, b. at Obersalzbrunn, Silesia, son of a hotel-keeper; educated there and at the Realschule in Breslau. He worked for a time on a farm at Jauer, and then returned to Breslau to study art, continuing his education at Jena Univ. and settling in Rome in 1883-1884. In 1888 he married and settled to literary work in Berlin. In 1891 he retired to Schreiberhau, Silesia. His first notable play, *Der Sonnenaufgang* ('Before Sunrise', 1889), a pioneer of the movement towards realism reproduced the harshness and debasement of Silesian peasant life; this was followed by *Ein-same Menschen* ('Lonely People', 1891), and then came his most famous play, *Die Weber* ('The Weavers', 1892), which dealt with the rising of the Silesian weavers in 1844 and was banned by the Licensor of Plays. His much praised play, *Die Versunkene Glocke* ('The Sunk Bell', 1896) is a poetic visionary dream not however devoid of external truth. *Hannele*, a drama on the fevered vision of a child, was produced in 1894, followed by realistic social and historical dramas, including *Fuhrmann Henschel* (1898), and *Der Rote Hahn* ('The Scarlet Hen', 1901). He wrote but few comedies, among them being *Der Biberpelz* ('The Beaver Cape', 1893). He was awarded the Grillparzer Prize in 1898 and in 1905 was made an honorary LL.D. of Oxford Univ. His later work is allegorical in treatment, with experiments in the supernatural bordering on the irrational. In 1911 he wrote a religious novel, *Der Narr in*

**Christo**: *Emanuel Quint*, and a long solemn pretentious philosophical poem, *Till Eulenspiegel* (1923), which represents a Ger. flying officer as prototype of the heroic Ger. character. In 1912 he was awarded the Nobel Prize for literature and he received many honours in Germany; but his increasing submission to the Nazi regime adversely affected his subsequent work. Prolific and poetical and, consistently serious in all he wrote, H. as a dramatist is too abstrusely romantic and wanting in human warmth, and, though he was early influenced by the realism of Maubert, Zola, and Ibsen, the manifest trend of his outlook was speculative, visionary, and symbolical. See his autobiography *Das Abenteuer meiner Jugend*, (1937), and study by E. Sulger-Gebing, 1909; also H. Marschan, *Das Milieu bei Hauptmann*, 1919 and H. Cysarz, *Sieben Weensbilder*, 1913.

**Hauraki**, gulf of the Pacific in North Is., New Zealand, 70 m. long and 40 m. broad. It has sev. excellent harbours, the tn of Auckland being situated on that of Waitemata, and it also contains many well-wooded is. A good outer breakwater is formed by the Great Barrier Is.

**Hauran** (Heb. *chauran*, the hollow land, so called from its numerous caves), dist. in Syria, comprising the mountainous plateau extending in the E. from the Jordan and into the E. of Thibrias. It consists of mt. ranges and large plains, with scattered eminences rising steeply from the valley of the Jordan to a height of about 2000 ft. above the Mediterranean. It is full of the remains of ant. cities and various monuments of the Gk. and Rom. periods. The whole country is inhabited only by wandering Bedouins and a few colonies of Druses.

**Hausas**, **Houssas**, or **Haussa**, W. African race, inhabiting a dist. of about 50,000 sq. m. in the W. and Central Sudan from the R. Niger to Bornu and including N. Nigeria. They represent a very high negro type, and have a strong admixture of Arab and Fula blood. The skin is very black, but the lips less thick and the hair less woolly than in most negroes. The men are of medium height, heavily built, and of great physical strength and endurance. Their language, which has a very wide range, is notable for its rich vocabulary. It belongs to the Hamitic group, and a large proportion of the words are connected with Arab and Semitic roots, thus tending to verify the native tradition that the origin of the race was beyond Mecca to the E. The language, which has become a lingua franca over a wide area, has been reduced to writing, in modified Arabic characters, by the natives themselves, and there is a certain amount of native literature. The Bible has been trans. into Hausa. The H. are a most industrious people. They are excellent agriculturists, have for long mined iron, tin, silver, lead, and salt, have developed numerous industries, including spinning, weaving, dyeing, and working in leather and glass. Kano, Katsena, and Yakoba are the chief centres. Their staple food is guinea corn. Family land-holdings are

clearly delimited, the whole Hausa country being covered with small holdings, ranging from 1 to 4 ac. The tenure remains one of user only, but the transfer of this right, subject to the sanction of the Emir, is now recognised by the native courts in Kano and Bornu. Though naturally peaceful, the H. make excellent soldiers. Since the early part of the nineteenth century their political significance in Nigeria has given way to that of the Fulani (see under FULANI). The pop. which numbers over 5,000,000, is predominantly Muslim. See C. H. Robinson, *Hausaland*, 1896; and *Dictionary of the Hausa Language*, 1925; G. P. Bargery, *Hausa Dictionary*, 1935; C. K. Meek, *The Northern Tribes of Nigeria*, 1925; W. Miller, *Yesterday and tomorrow in Northern Nigeria*, 1938; Lord Hailey, *An African Survey*, 1938; Sir A. C. Burns, *History of Nigeria*, 1943.

**Haushofer**, Karl (1869-1946), founder of Ger. geopolitics (q.v.), b. at Munich. He travelled in S.E. Asia between 1887 and 1919 and became prof. at Munich in 1921. His theories had much influence on the world-domination policies of the Nazis.

**Hausman**, **Georges Eugene**, Baron (1809-91), builder of modern Paris, b. in Paris. He was educated at Collège Henri IV., and studied for the law. In 1830 he became *sous-préfet* of Nérac; from 1849-51 was successively prefect of Var, Yonne, and Gironde, and in 1853 was made prefect of the Seine by Louis-Napoleon, who had vast schemes for the embellishment of Paris. The improvements carried out by H. transformed Paris, but their cost, which amounted to £31,000,000, led to considerable opposition, and in 1870 he was forced to resign by the gov. of Emile Ollivier. In 1877 he became Bonapartist deputy for Ajaccio. See his *Mémoires* (1890-93).

**Hautbois**, or **Hautboy**, see OBONE.

**Hautecloque**, **Vicomte de**, see LECLEUC DE HAUTECLOQUE, PHILIPPE.

**Hautefort**, **Viscount of**, see BERTHAN DE BORN.

**Haute-Garonne**, see GARONNE, HAUTE.

**Haute-Loire**, see LOIRE, HAUTE.

**Haute-Marne**, see MARNE, HAUTE.

**Haute-Saône**, see SAÔNE, HAUTE.

**Haute-Savoie**, see SAVOIE, HAUTE.

**Haute-Vienne**, see VIENNE, HAUTE.

**Hautes-Alpes**, see ALPES, HAUTES.

**Hautes-Pyrénées**, see PYRÉNÉES, HAUTES.

**Hautmont**, tn. of dept. Nord, France on the R. Sambre, 18 m. S.E. of Valenciennes. Pop. 11,100.

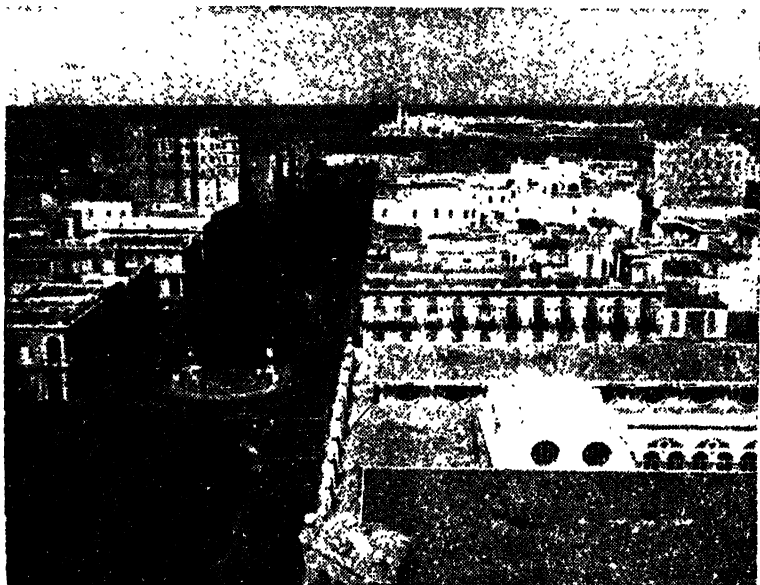
**Haut-Rhin**, see RHIN, HAUT.

**Haüy**, **Rene Just** (1712-1822), Fr. physicist and mineralogist. In 1781 he discovered the geometrical law of crystallisation associated with his name, which he afterwards expounded in his *Traité de minéralogie* (1801). For this he was elected to the Academy of Sciences in 1783. In 1802 he became Prof. of Mineralogy at the Museum of Natural Hist. His other works include *Traité élémentaire de physique* (1803), and *Traité de cristallographie* (1822). See life by G. Cuvier, 1823.

Haüy, Valentin, *see under* BLIND, *Institutions for the blind.*

Haüyite (or Haüyne), rock-forming mineral, named in honour of the Fr. mineralogist, Haüy (*q.v.*), consisting of silicates of aluminium and sodium, or aluminium and calcium, together with sodium and calcium sulphates. It is a vitreous, translucent substance, having a conchoidal fracture, a hardness of 5 to 5.5 and sp. gr. 2.2 to 2.5. It occurs in sky-blue, green or yellow cubes, crystallising in dodecahedra. The crystals often

tado Don Diego Velasquez, 'Llave del Nuevo Mundo' ('the New World's Key'), on account of its important position. By the Spaniards it was named San Cristobal de la Habana. It is the largest and most important city in the W. Indies. It occupies a peninsula, forming the entrance of a magnificent land-locked (towards the E. end of the N. coast of the Is.) harbour, averaging about 260 yds. in width and about 1400 yds. in length. This permits large vessels of all descriptions to come within the shelter of the harbour, which is



HAVANA : THE PRADO AND MORRO CASTLE

E.N.A.

contain symmetrically arranged inclusions of other minerals, so that the precise composition of H. is not yet certain. Frank Rutley thought that H. and nosean (*q.v.*) were mere varieties of the same species and X-ray examination has revealed its essential identity with nosean, sodalite, and the artificial ultramarines. Lapis lazuli is a member of the same group. On heating in the blow-pipe H. melts to a glass, whilst nosean only melts at the edges; both, however, are gelatinised with acids. H. occurs in volcanic rocks and especially associated with nepheline and leucite. It is found in Mount Somma, Puy de Dôme, Mount Vesuvius, the Laacher See near Koblenz, and elsewhere. It has occasionally been cut as a gemstone.

Havana, cap. of the Is. of Cuba, and one of the most important seaport tns. It was named by its founder, the Adelan-

divided into three distinct arms or bays, called Regla Bay, Guanabacoa Bay, and the bay of Atarés. The approach to H. from the sea is impressive, and beyond the surf-beaten coast the first conspicuous objects to strike the eye are the historic Morro Castle, whose venerable fortifications command the narrow bottle-necked entrance to the harbour, and its tall lighthouse, erected in 1844 by Governor-General O'Donnell. The Morro ('promontory'), erected on the left-hand side of the harbour, between 1589-97, is partly hewn out of the rock and partly constructed of solid blocks of rock, this giving it an irregular appearance. Its moat, 70 ft. deep, is crossed by a draw-bridge. The castle was captured by the Eng. under Lord Albemarle and Adm. Sir George Pocock in 1762. The first landing was made on June 7 to the E. of the harbour, and the Morro was closely



invested by land and sea, the Sp. fleet of twenty ships remaining in the harbour just as Adm. Cervera's ships were to do in 1898. The defence, after the Eng. had entered the fort, was gallant in the extreme, Velasco, the gov., being resolved to die rather than ask for quarter, and a battery to the E. of the castle perpetuates his memory. On the right is La Punta, another fort. Round the seaward side of the city is the fine driveway on a sea-wall, called the Malecon, with its gardens and handsome bandstand. Beyond the Morro on the left are the heights forming an amphitheatre S. and W. of the city, some of the hills being 1000 ft. high and crowned with fortifications known as the Cabanas, built in 1763-74. The fortress 'Castillo del Principe' is entered by a massive gateway approached by a drawbridge. It was in this harbour that the Amer. cruiser *Maine* was blown up on Feb. 15, 1898, when 270 men and 2 officers were killed, this being the immediate cause of the Sp.-Amer. war. In 1912 the *Maine* was raised, towed out to sea and sunk. Many improvements have been effected in H. since the U.S.A. military occupation, notably in the way of wider thoroughfares, better built houses, and general sanitation. Yellow fever, a very prevalent epidemic, was found to be caused through the sting of a mosquito (*Negombia*), and precautions were taken to remove the cause of offence.

The chief trade of H. is the tobacco industry, and there are numerous cigar factories. Sugar is also one of the principal products. There is an extensive export trade in sugar, tobacco, cigars, grape fruits, and other products. Trade is chiefly with the U.S.A., Great Britain, and France. There are sev. important public buildings, such as the Palace, the Exchange (El Mueble), and the custom-house. The handsome railway station of the United railways of Havana is near the S. of the city where once stood the arsenal. A series of parks and avenues cross H. from S. to N., following closely the direction of the old walls. From Parque Fraternidad, the Prado, or Paseo de Martí, a boulevard of laurel trees, extends to the Malecon. Facing Central Park are the handsome Capitol, crowned by a white dome, and the National Theatre, which can seat an audience of 3000. Obispo (Bishop) and O'Reilly Streets, narrow and highly picturesque, and the chief shopping centres, run parallel to the old Presidential Palace in the Plaza de Armas. O'Reilly Street was named after the Sp. general who entered the city by it while the Eng. left by Obispo Street when the city was given back to Spain at the end of the Seven Years' war. To the N. of the Plaza de Armas is La Fuerza, reputed to be the oldest fortress in the New World, and erected by Hernando de Soto in 1519. On its tower is the Habana, a figure emblematic of the city. On the W. side of the Plaza is the Cabildo (q.v.) or Ayuntamiento, or City Hall, in Sp. times the residence of the Captain-general. At the N.W. corner of the Plaza is the Supreme Court of Justice, once the resi-

dence of the archbishop and, later, the Senate House. The cathedral, dedicated to the Virgin of the Immaculate Conception, is near the junction of Empedrado and San Ignacio Streets. It was built in 1704 by the Jesuits, with twin towers and massive walls. H. has a National Library, schools of arts and trades, a fine univ. and sev. secondary schools, etc. H. is the terminus of the air-mail and passenger planes from the U.S.A. and a station for the air connection S.E. to Haiti, Central America, etc. It is the terminus of the chief railways of the Is. and has an excellent steamship service with the leading Amer. and European ports. Pop. 673,300. The prov. of H. has a pop. of 1,235,900.

**Havana, Declaration of, made by the Pan-Amer. Conference, July 30, 1940.** vetoing the transfer of the colonial dependencies of non-Amer. countries in the W. Hemisphere to other non-Amer. countries. The aim of the declaration was to prevent the seizure of Fr., Dutch, or other European colonies by Germany or Italy. The Conference arranged that if any transfer were attempted the possessions might be jointly administered by the Amer. republics, at least two-thirds of the republics participating, until such time as their definitive gov. should be decided by the free determination of their people. Any sudden attempt at seizure would be met by the U.S.A. acting in the defence of the continent of America. An other resolution recommended marketing agreements, including loans to producers, to keep stocks of S. Amer. commodities off the Ger. and Ital. mktts.—the agreement to be financed by a 500 million dollar fund of the Amer. Import and Export Bank.

**Havant, tn. of Hampshire, England,** near the head of Langstone Harbour. Near it is the Is. of Hayling. It has brewing and tanning industries, and manufs. parchment. Pop. with Waterlool, 26,300.

**Havel, riv. of Central Germany,** rising in Lake Dambeck, Mecklenburg, and flowing into the Elbe just above Wittenburg after a course of 231 m. It is largely canalised and joined to other rivs. and lakes by canals.

**Havelock, Sir Henry, (1795-1837), Eng. soldier,** entered the army in 1815, and went to India with the 13th regiment eight years later. He served in the Burmese war (1824-26), and was aide-de-camp to Sir Willoughby Cotton in the Afghan war of 1839. During the next years he rose steadily in his profession, and saw much active service. In the Indian Mutiny, during the last year of his life, he won worldwide renown. He captured Cawnpore in July, and was promoted maj.-gen.; and in the next few months effected the relief of Lucknow. A few days later he died. He had in Sept. been made K.C.B., and, before his death was known in this country, was created a baronet and granted a pension of £1000 a year. See life by J. C. Marshman, 1860.

**Havelock the Dane, see under ENGLISH LITERATURE.**

**Haverfordwest**, seaport of Pembroke-shire, S. Wales, on W. Cleddau It., 6 m. N.E. of Milford. It is a contributory parli. and municipal bor. and a co. of itself, having a lord-lieutenant. There are coal-mines. The tn. was settled by the Flemings in the reign of Henry I. The Grammar School was founded in 1613; the parochial Grammar School was founded in 1188. Pop. 7900.

**Haverhill**, (1) Mkt. tn. in Suffolk, England, on the borders of Essex and Cambridgeshire, 18½ m. S.E. of Cambridge on the Rom. road known as the Via Devana. Few relics of antiquity are left in the tn. as it was largely destroyed in a disastrous fire in 1663 in which the fine fourteenth-century par. church was much damaged; it has since been completely restored and enlarged. The manor house, now the vicarage, is of seventeenth-century date and contains some fine panelling. To the S.E. are some scanty remains of an earthwork known as Haverhill Castle. Two m. to the S. is Kedington with its church noted for its wonderful collection of tombs and fittings dating from the thirteenth to the nineteenth centuries. There are manufs. of ready-made clothing (dating from 1784), heavy hand-made gloves, hair canvas for stiffening coats and fibe mats. Other industries are the manuf. of agric. implements and brushes, and there are also a rope works and a large flour mill. Pop. 4150. (2) City in Essex co., Massachusetts, on l. b. of the Riv. Merrimac, 33 m. N. of Boston. It is connected with Bradford by a bridge. H. is the bp. of the poet Whittier, who was educated at the academy in the tn. The prin. business of the place is the manuf. of boots and shoes. Pop. 46,700.

**Haverstraw**, vill. of Rockland co., New York, U.S.A., on the R. Hudson, 35 m. N. of New York, overhung by limestone cliffs. Pop. 5900.

**Havildar** (Hindu *havelदार*), non-commissioned officer attached to a native regiment in India. The rank corresponds to that of a sergeant in a European regiment.

**Havre**, or **Le Havre**, seaport in France, is second in importance to Marseilles. It is the cap. of the arron. in the dept. of Seine Inférieure, and is situated on the N. side of the estuary of the Seine, being distant 113 m. from Paris, and 53 m. from Rouen. The larger portion of the tn. stands on the level ground surrounding the estuary, but the richer quarter is situated on the heights of La Côte. The basins or docks of Le Havre form a triangle in shape, and are entered by means of the Outer Port. There are nine basins, the oldest dating back to the seventeenth century. In recent years another new entrance was made by means of two breakwaters, whilst the Tancarville Canal permits riv. boats to approach the port direct, without attempting the estuary of the Seine. The chief basins are the Bassin Bolot, and the Bassin de l'Eure. This port trades with all the chief European ports, with America, Africa, and the W. Indies. Its chief imports are cotton, woollen goods, silk,

wheat, sugar, and coffee, whilst its exports are Fr. manufactured cloths, wine and spirits, and agric. and dairy produce. It is noted for mechanical engineering and shipbuilding trades. Its name was originally Havre de Grâce, because a chapel was built in 1516, dedicated to Notre Dame de Grâce. The chief buildings were the hôtel-de-ville, the law courts, and the exchange, but these and other buildings were seriously damaged or destroyed in 1944. It was used as a base and place for landing troops during the First World War, and the Belgian Gov. transferred their headquarters here. Trade, which had decreased since that War, had attained its previous standard prior to the outbreak of the Second World War.

H. was occupied by Ger. forces after the collapse of France in 1940. It was frequently bombed by the R.A.F. in 1940 and the succeeding years. It proved a thorn in the Allied side during the build-up of the invasion forces in Normandy, Ger. mine-laying aircraft and surface craft, based on the port, being awkward enemies. Attacks by Ger. light coastal craft, such as 'E' and 'It' boats, based on H. and on Cherbourg were made by the Gers. with a persistence equal to that of their air mine-laying effort. After Cherbourg fell a number of 'E' boats were sent to Brest, and the chief menace to the Allies then became concentrated at H., from which operations were directed primarily against Brit. anchorages. But successful attacks were made by Bomber Command against the docks, sinking a number of 'E' boats and other craft at their moorings. H. was cut off when the Allies had crossed the Seine (Aug. 1941), but the Ger. garrison rejected an ultimatum to surrender on Sept. 1 and the city was then invested by the Allies. Attacks were supported by heavy aerial bombing during which more than 11,000 tons were dropped on the city, half this total being dropped on Sept. 10. On Sept. 10 also the final ground attack was launched by the Brit. 10th Infantry Div. operating with the Canadian First Army under Gen. Crerar. This attack was supported by naval forces including the battleship *Harpis* and the monitor *Erebus*, which bombarded Ger. installations with 300 rounds of 15-in. shell. By noon on the 11th the N. and E. outskirts of the city had been reached and by midday on the next day the city surrendered with its garrison of 7000 troops. The damage done to the city was heavy and widespread, churches and other historic buildings, including the three museums, being destroyed. Pop. 106,900, arron. 322,100.

**Havre-de-Grace**, city in Hartford co., Maryland, U.S.A., on W. bank of Susquehanna R., 35 m. N.E. of Baltimore. Through it passes the Wilmington and Baltimore railroad, which crosses the Susquehanna by a steam-ferry. There are canning factories, flour and lumber mills. Pop. 4000.

**Hawaiian Islands**, or **Hawaii**, formerly the **Sandwich Islands**, form a ter. of the United States. They consist of a chain

of 20 is. in the N. Pacific Ocean between 18° 55'-22° 16' N. lat. and 154° 4'-160° 30' W. long., some 9 of which are inhabited. The inhabited is. extend for about 380 m. from E.S.E. to W.N.W., whilst the uninhabited ones continue the chain for many hundreds of m. W.N.W. All the is. are of volcanic origin, and nearly all of them are surrounded by coral-reefs. The names of the inhabited is. are Hawaii, Maui, with two smaller is., Kahoolawe and Lanai, Molokai, Oahu, Kauai, and Niihau. Hawaii Is. is in the shape of an irregular triangle, the sides of which measure 90 m., 75 m., and 65 m. This is. is the chief of the group, and it possesses the largest volcano in the world, the Mauna Loa (Great Mt.). This mt. has been the scene of many terrible eruptions, the last of which in 1907, was attended by an earthquake. The mt. has a huge crater, called Mokuaweoweo, and is 13,675 ft. high. The mt. of Kilauea erupted in 1924 and earthquakes have been numerous. A volcanic observatory is situated at Kilauea. Maui lies 26 m. distant from Hawaii, and consists of two mts. connected by the isthmus Wailuku about 8 m. long and 6 m. wide. The two small is., Kahoolawe and Lanai afford pasturage for sheep, and are private property. The is. of Molokai has a famous leper settlement called Kalawao, which is an *isthmus*, shut off from the rest of the is. by a rock wall, 2000 ft. high. The is. of Oahu is surrounded by a coral reef, and lies 23 m. from Molokai. It is very mountainous, with remarkably beautiful valleys and tropical vegetation. There are six craters on the lower mts. near the coast. The cap. Honolulu is situated on this is. The Federal Gov. of the U.S.A. to facilitate the protection of the Pacific coast and the control of the Panama Canal, constructed extensive naval works at Pearl Harbour, about 7 m. from Honolulu, and also military works at Honolulu and other places on the is. The dry dock at Pearl Harbour naval station was opened in Aug. 1919. Kauai is 63 m. from Oahu, and has been called the 'garden isle' on account of its fertile ground. Niihau completes the chain of inhabited is., and is remarkable for its coral reef in the W. and for the large salt lagoons in the S. For administrative purposes the Ter. of H. consists of four cos. The is. of Oahu is known as the city and co. of Honolulu. The remaining cos. are Hawaii (including the is. of that name), Maui (including the is. of Maui), Kahoolawe, Lanai and all Molokai, except its leper settlement; and Kauai (including the is. of Kauai), and Niihau. The Molokai leper colony, where Damien (g.v.) worked between 1873-1889, constitutes a fifth co., Kalawao, which is controlled by the Board of Hospitals and Settlements. The Amer. President appoints the Governor; there is a Senate of 15 and House of Representatives of 30 members; and the Ter. sends a delegate to Congress at Washington.

The natives of Hawaii were cannibals in earliest times, but they became more civilised with the influx of other races, and

they owe their Christian religion and general education to missionaries (see DAMIEN, FATHER), the first to arrive coming from America in 1820. The pop. is very varied, consisting of Europeans, Chinese, Amer., and Jap. The climate is most salubrious, and the cultivation of the sugar-cane forms the chief trade. The is. are very fertile and, besides the sugar cane, rice, pineapples, bananas, coffee and other tropical and subtropical products are largely grown. Valuable timber is procured from the vast forests. Services of steamers connect the is. with America, Australia, China and Japan, and there is an inter is. steam navigation company. There are telephones and wireless telegraphy, and Honolulu is lighted by electricity. Hawaii has a supreme court and circuit courts, and elementary education is compulsory and free. There is a normal school and a univ. (founded in 1907). Pop. of the is. by the census of 1930 was 388,336, an increase of 43.9 per cent over 1920.

*History*.—Captain Cook discovered the H. I. in 1778 and named the group Sandwich is. after the fourth earl of Sandwich then First Lord of the Admiralty; but in 1779 lost his life in an unimportant encounter at Kealahou Bay. Later some Brit. and other European sailors settled there, including two men, John Young and Isaac Davis, who became influential advisers to King Kamehameha I., called the Great, founder of the Hawaiian State and monarchy. The Hawaiians looked to Britain as their disinterested protector, as is shown by their flag devised early in the last century and consisting of narrow bands of red white and blue with the Union Jack in the upper canton. Kamehameha died in 1819 and his successor, Kamehameha II., disturbed over the changes through the growing intrusions of white men, resolved to visit England for advice, and with his queen, Kamamalu, and Polynesian retinue, landed in England in 1824; but the royal pair both succumbed to measles in London before their meeting with George IV. who, however, promised their followers that he would watch over their country. The Brit. Gov. then appointed Capt. Richard Charlton of the mercantile marine to be its first Consular Agent for 'the Sandwich, Friendly, and Society Islands' to reside at Honolulu. Charlton, after some years there, marked by sev. disputes, was succeeded in 1843 by Gen. Wm. Miller, with consular jurisdiction in all the Pacific Is. This change was due to a dispute between Charlton and Kamehameha III.'s Amer. adviser, Dr Judd, over an acting consular appointment made by Charlton. The Brit. co. only, apprehensive at the attitude of the Hawaiian Gov., protested to Adm. Thomas, Brit. naval commander-in-chief, who sent Capt. Lord Geo. Paulet to Honolulu in H.M.S. *Carysfort* to investigate the position. Paulet was soon involved in a dispute with Judd, who advised the king, pending the return from England of an Hawaiian envoy who had gone there to lay his case before the Brit. Gov., to cede the is. provisionally to

Queen Victoria, feeling confident that the Brit. Gov. would reject the offer. Judd was right in his expectation, Adm. Thomas reporting that Lord Aberdeen, the Brit. Foreign Secretary's decision was to the effect that he did not think it politic or advantageous for Great Britain to establish a paramount influence in the is. as against other Powers; and such remained the state of affairs until the reigning dynasty ended with the death of Kamehameha V. in 1873. Meanwhile, in 1862, an Anglican bishop arrived in H. despite the opposition of the Amer. missionaries, and, in 1863, Emma, widow of Kamehameha IV., and a granddaughter of John Young and his native wife, visited England as the guest of Queen Victoria. But notwithstanding these bonds with England, commercial and agric. developments in H., combined with the enhanced local position won by the Amer. missionaries through land ownership and business interests, resulted in the United States acquiring the paramount influence in the is. In 1874 Kalakaua was elected king as the candidate in favour of Amer. annexation against the dowager-queen, Emma, who was supported by the majority of Hawaiians. Great Britain opposed Amer. annexation, but James G. Blaine (q.v.), Amer. Secretary of State, informed the Brit. Gov. in 1881 that sooner or later H. would have to come under Amer. protection, but that time did not arrive until the Sp.-Amer. war, when America sought a stronghold and supply depot in the Pacific. H., which had been an independent native kingdom till 1893 and a republic from 1894-98, was formally annexed in 1898 and became a Ter. in 1900. The post of Brit. Consul-General in the Pacific is now held by the Governor of Fiji and high commissioner for the W. Pacific. A plebiscite held in the is. in 1940 on the issue whether the Ter. should apply for statehood resulted in a majority of two to one in favour of statehood, which, if accepted, would have made H. the forty-ninth State of the U.S.A. But in Dec. 1941 the Jap. launched their sudden and treacherous attack by plane and submarine on Pearl Harbour and H. thus became a pawn in the world conflict (see PEARL HARBOUR). By the summer of 1942 the Jap. had completed preparations for an attempt to capture Midway Is. as a stepping stone to an assault on H., but the decisive Amer. air-naval victory off Midway Is. (June 3-6, 1942) averted the danger for the rest of the war.

The pop. of the Ter. of H. is 525,100 (Honolulu Co. and city, 268,900; Hawaii Co. 73,800; Maui Co. 55,900; Kauai Co. 35,100). In 1940 some 80,000 of the pop. were aliens. The land area in the is. is 6435 sq. m. Prin. cities—Honolulu on the is. of Oahu, with a pop. in 1947, of 268,900; Hilo (on Hawaii) 29,100, until the Second World War, was Jap. and will probably remain so.

**Hawarden**, or **Harden**, mrkt. tn. and par. of Flintshire, N. Wales, 7 m. W. of Chester, and 195 m. N.W. of London. It is connected by a railroad with the banks

of the Dee. The tn. is large and well-paved, and contains a church, nearly destroyed by fire in 1857, but now restored. In the park is the ruined keep of a thirteenth-century castle, from which a fine view is obtained of the Dee. Lord Gladstone's seat, Hawarden Castle, dates from 1572. H. has coal-mines, clay-fields, brick works, and potteries, and manufs. tiles, pottery, etc. St. Deiniol's Library and Hostel for theological students was founded at H. in 1895 by Gladstone. Pop. (rural dist.) 31,000; (mrkt. tn.) 8000.

**Hawes**, **Stephen** (d. c. 1523), Eng. poet probably a native of Suffolk. Educated at Oxford, and afterwards travelled in Europe. Was attached to the court of Henry VII., his knowledge of Eng. poetry and literature procuring him an entry. His prin. work is *The Pastyme of Pleasure, or the History of Graunde Amoure and la Bel Pucel*, containing the knowledge of the Seven Sciences and the Course of Man's Life in this Worlde (1509), an elaborate allegory in forty-six chapters. He also wrote *The Convergence of Syceres* (1509) and *Comfort of Lovers* (1512). *The Temple of Glass* attributed by Warton to H. is ascribed to Lydgate by H. himself. See W. Minto, *Characteristics of English Poets*, 1874, and J. M. Berdan, *Early Tudor Poetry*, 1920.

**Haweswater**, lake in Westmorland, England, 5 m. N. of Kendal, and forming a fine catnaect on the road to Penrith. It is very narrow, but deep. The construction of an aqueduct from H. to Manchester was begun before the Second World War; it is intended to provide Manchester with 100,000,000 galls. of water a day.

**Hawfinch** (*Coccothraustes vulgaris*), species of the Grosbeak genus and Finch family, a good deal larger than the chaffinch. The male bird has brown and black markings on the head, black wing quills, and a white tip of the tail, and the neck crossed at the back by a broad band of ash colour. It is a timid bird and perches on the topmost branches of trees, where it commands a good outlook, and is not easily discovered. The nest is built in lichen-covered trees, of twigs and mosses. Its food consists of the fruit of the pine, hornbeam, plum, cherry, hawthorn, laurel, holly, etc. It is abundant in S. Europe, and is distributed in the temperate parts of Asia. It is not uncommon in some parts of England, but in Scotland is very rare.

**Hawick**, par. in the S.W. of Roxburghshire, Scotland, 52 m. by rail S.S.E. of Edinburgh, and 45 m. N.N.E. of Carlisle. The tn. adapts its topographical arrangement to the course of the river Teviot and Slitrig, a handsome bridge being built across the former. H. is a place of great antiquity, traces of which are seen in the Moat, an artificial earthen mound, and in part of Tower Hill, at one time the peel-tower of the Douglas family, and later a residence of the dukes of Monmouth. H. is the seat of a woollen manuf., the earliest branch seeming to be that of carpets, estab. in 1752. The fabrics principally made are hosiery, druggot,

checks, tartan, etc. The Common Riding, a traditional festival, is held annually. Stobs, a military camp, is 3 m. to the S. Pop. 17,200.

**Hawk**, term applied in a general way to all the diurnal birds of prey with the exception of vultures and eagles. Of the Hs. proper, the chief Brit. species are members of the genus *Accipiter*, the goshawk and sparrowhawk. Hs. are distinguished by their short wings, and not particularly strong beaks. See also FALCONRY.



HAWK

left sparrowhawk; right, goshawk

**Hawkbit**, genus (botanical name *Leon-*todon**) of plants of the order Compositae, allied to the dandelion. Three species are found in Britain. It has large yellow flowers and long leaves.

**Hawk-Eagle**, species of hawk of smallish size, belonging to the genera *Spizcaus* and *Morphnus*; natives of warm climates, and often very beautiful in form and colour. Some species are provided with well-developed crests which extend backwards from the crown of the head. An Indian species is called "peacock killer" and is exceedingly destructive to gamebirds of every description; and in Africa there is a species 31 in. long. Hs. are often termed "crested eagles," the crest being best seen in a species of *Morphnus* from Guiana, though it is absent in a bird of the genus *Nisactes* in India.

**Hawke**, Sir Edward, Baron Hawke of Lorton (1705-81), Eng. adm., b. in London; entered the navy in 1720, becoming commander in 1733. In 1744 he distinguished himself in the action off Toulon, commanding the *Berwick*, one of the few ships properly handled. In 1747 he became a rear-adm., and gained a victory over the Fr. off Finisterre. For this service he was knighted and became M.P. for Bristol the same year. He became an adm. in 1757. His chief fame was gained in 1759 after his attack on Marshal Conflant in Quiberon Bay, which resulted in the destruction of the Fr. fleet, and the

collapse of their invasion scheme. In 1760 he was made first lord of the Admiralty and created Baron H. for life. See M. Burrows, *Life of Hawke*, 1883.

**Hawke**, Martin Bladen, seventh Baron (1860-1938), Eng. cricketer. For the record period of twenty-eight years he captained the Yorkshire co. eleven; also led teams in Australia (1889-92; 1894-95) and in S. Africa (1895-96).

**Hawker**, Robert Stephen (1803-75), Eng. poet and antiquary, b. at Stoke Damerel, near Plymouth, Devonshire, eldest son of J. S. Hawker, vicar of Stratton, Cornwall. Educated at Cheltenham Grammar School and Pembroke College, Oxford. In 1827 he carried off the Newdigate prize, was ordained in 1831, and became vicar of Morwenstow on the Cornish coast in 1834. He laboured here for forty years, during which period he rebuilt the vicarage, restored the church, and built a school. His theological views were mainly those of the tractarians. H.'s ballads were direct and simple in style and composed in the true spirit of antiquity. None is better known than his spirited ballad based on the old Cornish refrain, "And shall Trelawney die?" Other of his poetical pieces are *Tendrils by Reuben* (1821), *Records of the Western Shore* (1822), *Reeds Shaken with the Wind* (1843), *Quest of the Sangrael* (1864), *Footprints of Former Men in Cornwall* (1893). See S. Baring Gould, *The Vicar of Morwenstow*, 1875; C. E. Byles, *Life and Letters of Robert Stephen Hawker*, 1905; M. F. Burrows, *Robert Stephen Hawker: A Study of his Thought and Poetry*, 1926; and M. Collins's novel, *Sweet and Twenty*, 1875, in which H.'s character is delineated under the name of Canon Tremaine.

**Hawkers and Pedlars**, itinerant dealers engaged in the business of carrying their goods for sale from place to place. The trade is regulated under special supervision of the legislature, this being made necessary by the opportunities afforded dealers with no fixed domicile of evading responsibility and practising fraud. By the Act of 1871, a pedlar is a person who sells articles, travelling without a horse or other beast, and certificates are supplied, to those desirous of carrying on the trade of a pedlar in good faith, by the chief officer of the police of the dist. for which they are asked. The Hawkers Act, 1888, defines a hawk as one who travels with a horse, or other beast, bearing or drawing a burden. A single act of selling does not constitute a pedlar, and persons who travel about seeking orders for goods, as agents, sellers of fish, fruit, victuals, and exposing goods for sale in a public mkt., do not come under the category. The fee for a pedlar's certificate is 5s., and a hawkier's licence can be taken out at a cost of 4s.

**Hawkes Bay**, or **Waikato**, in New Zealand, N. Is., between Auckland and Wellington, on the E. coast. It is enclosed on the N.E. by Mahia Peninsula, and extends S. to Cape Mata-mau, a total distance of about 60 m. In 1769 Cook entered it in the *Endeavour*, and in 1848 it was occupied by Europeans. H. B. receives sev. considerable streams,

**Hawkesbury**, one of the chief rvs. of New S. Wales, Australia, flowing eastward and formed by the union of the Nepean and Grove Rvs. The united stream forms the N., W., and E. boundaries of Cumberland co., and, after a course of about 80 m. eastwards, falls into Broken Bay. It is navigable for vessels of 100 tons, but is liable to great and rapid inundations, produced by the fall of rain on the Blue Mts. Its banks consist of fine alluvial soil. In 1889 railway connection between Adelaide and Brisbane was completed by a bridge over the riv. Total length, 330 m.

**Hawkesworth, John** (c. 1715-73), Eng. miscellaneous writer of humble parentage, b. in London. In 1744 he succeeded Dr. Johnson as compiler of the *Gentleman's Magazine*. In 1752 he started with Johnson and others *The Adventurer*. H. was the editor, and of the 140 papers, wrote some seventy-two or so. In 1755 he pub. *The Works of Jonathan Swift*, with historical notes and explanations, and prepared the account of Capt. Cook's first voyage, forming part of his own pub., *Voyages*. He also wrote an oratorio, *The Fall of Egypt* (1774), sev. essays, and some plays.

'Hawkeye State,' see IOWA.

**Hawkhurst**, par. partly in Kent and partly in Sussex, England, 12 m. N.W. by W. of Rye, by rail. Pop. 3000.

**Hawking**, see FALCONRY.

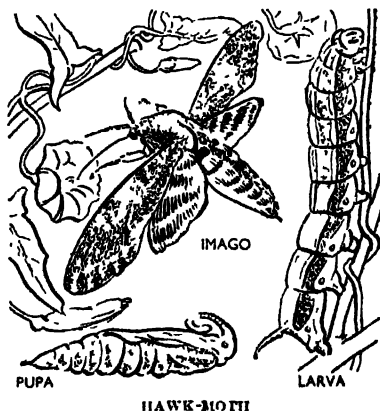
**Hawkins, Sir Anthony Hope** (1863-1933), Eng. author whose pseudonym was 'Anthony Hope'; second son of Rev. E. C. Hawkins, vicar of St. Bride's, Fleet Street. He began to write early, but it was not until he pub. *The Dolly Dialogues* (1891) that he became generally known. The best of his many books, are *The Prisoner of Zenda* (1894), *The King's Mirror* (1899), *Quisiam* (1900), and *Second String* (1910). A master of dialogue, he designed a large portrait-gallery of interesting characters from music hall singers to statesmen. His *Prisoner of Zenda* added to the language a new adjective, 'Kuriltanian,' whose use is to qualify modern gov. and to make it as like gov. in the Dark Ages as possible, for the sake of picturesqueness. H. was knighted in 1918. His later work includes: *A Young Man's Fear* (1915), *Captain Dieppe* (1918), *Beaumaris Home from the Wars* (1919), *Lucinda* (1920), *Little Tiger* (1925), *Memories and Notes* (1927). His plays include *The Adventure of Lady Ursula* and *Pilkerton's Persecution*. See Sir C. Mallet, *Anthony Hope and His Books*, 1935.

**Hawkins, Sir Henry, Baron Brampton** (1817-1907), Eng. judge, b. at Hitchin, Hertfordshire, and educated at Bedford School. In 1839 entered at the Middle Temple. Called to the Bar in 1843 and joined the home circuit and Hertfordshire sessions. Took silk in 1858, and for the next eighteen years was one of the most prominent leaders of the Bar. He was engaged in many important cases: his well-chosen language and lively intelligence succeeded in winning for him the verdicts of juries. In 1876 appointed judge of the High Court

of Justice: knighted and transferred to the Exchequer Div. the same year. H. figured in the Tichborne trials and many others of equal importance. As a criminal judge he had few equals, though Sir Edward Clarke, K.C., in *The Story of My Life* (1918), severely criticises his conduct as a judge with some justification. The so-called *Reminiscences* of H., pub. in 2 vols. in 1904, contain some amusing anecdotes; but the vols. are clearly the work of the editor, Richard Harris, the witty Q.C. who wrote the very entertaining *Hints on Advocacy* (1th ed.), 1880.

**Hawkins, or Hawkyns, Sir John** (1532-95), Eng. seaman and naval commander, b. at Plymouth. While quite a young man he made sev. voyages, and was the first Englishman to traffic in slaves. In 1573 he was made navy treasurer, and knighted as a reward for his services against the Armada in 1588. In the mustering of the Eng. fleet to defend the country against the Spaniards, H. was capt. of the *Victory*. While at Plymouth he served under Drake, and was a member of the council of war. In 1591 he served in an expedition, ordered to the W. Indies under the command of Drake, to the Sp. Main, but died at sea off Porto Rico. He left one son, Sir Richard H., also a naval commander. His *True Declaration of the troublesome roynage of M. John Hawkyns to the parties of Guinca and the West Indies*, was pub. in 1569.

**Hawk-moth**, species of Lepidoptera belonging to the family Sphingidae, sometimes also known as 'sphinx-moth,' the



name being derived from the resemblance shown in the caterpillar stage to the Egyptian Sphinx. The moths belonging to this family are all large and dull coloured, with a long proboscis, a small hinder pair of wings, and long and pointed body. The caterpillars are smooth and striped, and usually furnished with an erect horn at the hinder end. Allied

species are the privet H., the pine H., the deathhead moth, and the hummingbird H.

**Hawthshaw, Sir John** (1811-91), Eng. Engineer, b. at Leeds in the W. Riding of Yorkshire. He constructed various docks, Holyhead Harbour, the Severn tunnel (1887), Charing Cross and Cannon Street railway stations and bridges, and part of the Underground Railway of London. He was for a time engineer to the Manchester and Leeds Railway; and later on to the Lancashire and Yorkshire Railway.

**Hawthamoor, Nicholas** (1661-1736), Eng. architect, b. at E. Drayton, Nottinghamshire, and at the early age of eighteen obtained employment under Sir Christopher Wren. He became deputy-surveyor of the works at Greenwich Hospital in 1705. Through Wren he obtained the post of clerk of the works at Kensington Palace, an office which he held till 1715. He also assisted Wren in the erection of St. Paul's Cathedral from its commencement to its completion in 1710. Under Sir J. Vanbrugh he was also assistant surveyor at Blenheim Palace, Oxfordshire (1710-15). At Oxford H. was employed from an early period, and much of his work is seen there at the different colleges. At the close of Anne's reign he took a large part in the building of fifty new London churches. See H. S. Goodhart-Rendel, *Nicholas Hawthamoor* 1921.

**Hawthorn, or Hieracium**, genus of plants of the natural order Compositae. They are a perennial species of herbs, characterised by yellow, orange, or red flowers. The orange H., a native of Europe, is frequently cultivated in gardens by reason of its handsome blooms. The plant is very hairy, having a tuft of oblong leaves at the base. It is quite a pest in the meadows and pastures of New York state, and can only be overcome by cultivation.

**Hawthorn, Sir John de** (d. 1391), Eng. soldier and captain, b. at Sible Hedingham in Essex. He won both renown and riches as a condottiere in Italy, where he was known as Giovanni L'Acuto. He distinguished himself at Crécy and Poitiers, and was knighted by Edward III. From 1363 onward he fought in the It. wars on different sides, and was finally persuaded to fight the battles of Florence for an ann. pension. See J. T. Leader and G. Marcotti's life (trans. by Mrs. Leader Scott), 1889.

**Hawkins, Sir John**, see HAWKINS.

**Hawkins, Sir Richard** (c. 1562-1622), Eng. naval commander, son of Adm. Sir John H. He served under Drake, and took part in the defeat of the Armada (Aug. 1588) and in the subsequent descent on the Portuguese coast in 1590. Three years later he sailed in the *Dainty* on a voyage round the world. He touched Brazil, passed the Straits of Magellan, and took and plundered Valparaiso, but was defeated and wounded after a hard fight in San Mateo Bay, and imprisoned in Spain till 1602, when he was ransomed and knighted. Later he became vice-adm. of Devon and second-in-command in Sir Robert Mansell's fleet against the Algerine

pirates (1620-21). See his *Observations on his Voyage into the South Seas*, with biography by Sir C. R. Markham, 1878.

**Haworth, moorland vil.** and par. in the W. Riding of Yorkshire in the Kesteven div., 9 m. N.N.W. of Halifax. It has an area of about 10,540 acs. Charlotte Brontë, the novelist (1816-65) and her sisters resided here from their earliest years, and descriptions of the moorland scenery are to be found in their novels, notably *Wuthering Heights*, by Emily Brontë. The old church of H. has been ruthlessly demolished, but the graves of Charlotte and Emily Brontë are in the churchyard. The parsonage, where they lived, is now the Brontë museum. Pop. 6000.

**Hawthorn** (O.E. *haga*, *hæg*, or *hegethorn*), genus of shrub or small tree belonging to the species *Crataegus*, numbering about fifty, bearing fruit resembling in miniature that of the apple, and therefore belonging to the natural order Rosaceae, with spiny branches and alternate, simple or lobed leaves, smooth and shining. The flowers are sweet-scented, white, with a sometimes reddish tinge, and grow in flat-topped clusters. The H. is a native of the N. temperate regions, especially America, and is represented in the Brit. Isles by the H., whitethorn, or may. It thrives best in dry soils, and may be propagated from seeds or cuttings.

**Hawthorne, Nathaniel** (1801-64), novelist, is by common consent the greatest of all Amer. writers of fiction. He was b. at Salem, Mass., July 4, his ancestors being among the first settlers. Educated at Bowdoin College in Maine, he there met and won the friendship of H. W. Longfellow, afterwards to become celebrated as one of the greatest Amer. poets. His best-known works are *Twice-Told Tales* (two series, 1837, 1842), *Mosses from an Old Manse* (1846), *The Scarlet Letter* (1850), *The House of the Seven Gables* (1851), *The Blithedale Romance* (1852), and *The Marble Faun* (1866). While his earlier work won the praises of the critics, it secured for the author no recognition from the public, which was first attracted to his books when he pub. *The Scarlet Letter*, a story of New England in the seventeenth century. The admirable picture of the place and the spirit of the age, the tragic story so well unfolded, was at once acclaimed as the masterpiece it is still acknowledged to be. It is dark and gloomy, as a tale of human frailty and sorrow must be, and it would be painful to read were it not that the author so clearly shows that there is light beyond. Admirable as are H.'s other books, and especially *The House of the Seven Gables*, *The Scarlet Letter* stands apart, and above, all his works. Most of his fiction deals with the problems of evil and sin and their devastating effect upon human conscience, in large measure a sort of inheritance from his long line of Puritan forefathers. In the later years of his life he held a consular appointment in Liverpool. See lives by H.'s son, Julian, 1885; H. James, 1883; M. D. Conway, 1890; G. E. Woodberry, 1902; and C. Mather, *Nathaniel Hawthorne, A Ancestral Man*

1940; L. S. Hall, *Hawthorne, Actor of Society*, 1944.

**Hawtrey, Sir Charles Henry** (1858-1923), Eng. actor-manager and playwright; son of the Rev. John H., an Eton master. H. was first and foremost a racing man, but he achieved success both in England and in the U.S.A. as a first-class comedian. Took leading parts in: *The Man from Blankley's*; *The Private Secretary*; *The Little Damsel*; *The Naked Truth*; *Inconstant George*; *General John Regan*; and *Ambrose Applejohn's Adventure*.

**Hawtrey, Edward Craven** (1789-1862), headmaster and provost of Eton College, b. at Burnham, near Eton. Entered the school, with which his family had been connected for nearly 300 years, in 1799. See life by T. Thackeray, 1896.

**Hay**: (1) Mkrt. tn. and par. in Breconshire, Wales, 20 m. W. of Hereford, on the Wye, and 12 m. S. of New Radnor. Pop. 1300. (2) Post tn. and cathedral city of New South Wales, Waradgery co., in the middle of the Riverina dist., 70 m. N. of Deniliquin. Pop. 3000. (3) A riv. of Alberta, Canada, descending from the E. side of the Rocky Mts., and flowing into the Great Slave Lake, 350 m. in length, and navigable for 140 m.

**Hay, Sir George** (fl. 1456), Scottish poet and translator. In youth, in France, chamberlain to Charles VII. Returned about 1445. He resided with earl of Caithness and made trans. from Fr. for him. The prose consists of three books dealing with battles, chivalry, and princes' duties; found in MS. in the library of Sir Walter Scott. The poetry also is a translation from the Fr.—20,000 Scottish verses, called *The Buke of the Conqueror Alexander the Great*.

**Hay, James** (d. 1636), Brit. diplomat, accompanied James I. to England. Became earl of Carlisle, the first Scotsman to be created an Eng. peer. His previous titles were those of Baron H. and Viscount Doncaster. The king employed him in sev. embassies, notably to France to negotiate a marriage between the Prince of Wales and the Princess Henrietta Maria.

**Hay, John** (1838-1935), Amer. statesman and author, b. at Salem, Indiana. He was one of the private secretaries to President Lincoln, 1861-65. In 1879-81 he became first assistant secretary of state. In 1897, on the inauguration of President McKinley, H. was appointed ambassador to Great Britain, becoming subsequently secretary of state. After the war with Spain of 1898, he directed the peace negotiations. Among his most notable achievements were the Hay-Pauncefote treaty (q.v.) with Great Britain in 1901, and the settlement of the Alaskan boundary dispute between the U.S.A. and Canada in 1903. He pub.: *Pike County Ballads* (1871), of which the most famous are 'Little Breeches' and 'Jim Bludso'; *Castilian Days* (1871); a vol. of poems (1890); *Abraham Lincoln* (1890) in conjunction with G. Nicolay, etc. See *Addresses of John Hay*, 1906; *Letters from John Hay and Extracts from his Diary*, 1908; W. Thayer, *The Life and Letters of John Hay*, 1915.

**Hay and Ensilage.** Hay is composed of the stems and leaves of grasses, mown and dried for use as fodder. The object of the farmer in haymaking is to preserve the hay for winter use in a condition most nearly resembling the grass in its natural state, so preserving its nutritive value. To ensure this, the mowing should be done when the plants contain the largest amount of gluten, sugar and other soluble matter; this occurs when the grass is in flower. For the operation of mowing, dry sunny weather is required. After cutting, the grass is tedded, that is, shaken evenly abroad over the ground, on the first day, and afterwards put into small heaps, or 'cocks,' for the night. On the second and third day the same process is applied and if the weather has remained propitious, the hay should then be ready for stacking. A haymaking or 'tedding' machine, drawn by a horse, is adopted for use on a large farm. The following table gives the average constituents of clover hay and meadow hay of average quality; percentage in each case:—

	Clover	Meadow hay
Dry matter	83.0	84.00
Nitrogen	2.40	1.50
Mineral ash	7.00	6.50
Phosphoric acid	0.57	0.40
Potash	1.50	1.60

The hay crop in Great Britain and Ireland for the five years 1926-30, averaged 13 million tons, and in 1946 it was almost 7 million tons. The production per acre in 1914 was 1.15 tons, in 1928-30 2.1 tons, and in 1946 2.4 tons (see also *GRASS LANDS*).

**Ensilage** is the name given to the practice of preserving green food for cattle in 'silos' or pits. The practice of 'caching' stores, etc., in such pits is very old, but it was not till comparatively recent years that the idea of using them for the preservation of fodder was carried out. The 'silos' used should be at least 15 ft. deep, and both air-tight and water-tight; an erection above the ground is sometimes used instead of a pit. Crops which are suitable for ensilage are grass, clover, vetch, oats, rye, maize, etc. Ensilage forms a wholesome and nutritious food for cattle, and a very good substitute for root crops. Cows fed on ensilage give quite as good milk as when fed on any other variety of fodder, and it is calculated that a larger number of cattle can be supported on a certain area by the use of ensilage than by the use of green crops. See S. F. Armstrong, *British Grasses and their employment in Agriculture*, 1937.

**Hayange** (Ger. Hayingen), tn. of France, in the dept. of Moselle, 16 m. N.N.W. of Metz, on the R. Feusch. There are iron-mines and metallurgical industries. Pop. 10,300.

**Hayaseca, Jorge**, see ECHEGARAY Y FIZARRI, JORGE.

**Hayashi, Tadasu**, Count (1850-1913), Jap. statesman, b. at Tokyo; sent to England by the Tokugawa Gov. among the first batch of students. He had much



to do with the modern rise of Japan, and figured in the revolutionary movement. He obtained office in 1871, and rapidly rose to the front rank: serving as vice-minister of foreign affairs; and then being appointed to represent his country—first in Peking, then in St. Petersburg, and finally in London. He was created viscount for his services in negotiating the first Anglo-Jap. Alliance. Throughout the Russo-Jap. War he remained in London. He returned to Tokyo in 1906; and was created a count in 1907, for services performed during the Russo-Jap. War. He trans. many Eng. works into Jap. and was author of *For His People* (1903).



HAYDN

**Haydn, Joseph** (1732-1809). Austrian composer, son of a vil. wheelwright at Rohrau, Austria. At the age of twelve he became a chorister at Vienna, receiving at the same time some instruction in the violin and pianoforte. After studying under Porpora, he produced with great success, when only twenty years old, his first opera, *The Devil on Two Sticks* (1752); this was followed by a set of trios, and his first important quartet, all of which earned the usual censure of pedantic critics for 'contrapuntal errors,' and 'daring innovations.' In 1758 he met Prince Antony Esterhazy, and two years later was appointed leader of his excellent orchestra. He remained under the family's patronage for thirty years, during which time he composed a prodigious quantity of orchestral and chamber music, some operas, and also the music to the 'Seven Words on the Cross,' afterwards brought out as an oratorio in 1801. On the death of Prince Nicholas Esterhazy (1790), H. accepted Salomon's invitation

to appear in London as conductor of his own compositions; and he remained until 1795, composing meanwhile, amongst others of his finest works, the *Twelve Symphonies*, perhaps the best of the 120 or more that he wrote; also, the degree of Mus. Doc. was conferred on him by Oxford. On his return to Vienna (1795), he began work on the *Creation*, which he completed in 1798; a few weeks later its first performance caused an immense sensation in Vienna, and before long it had travelled round half Europe. Three years later he produced his last important work, a splendid setting of a version of Thomson's *Seasons*. H. was a composer of amazing fecundity; in addition to the 120 symphonies, he left twenty operas and eighty quartets, and a vast number of concertos, trios, and sonatas, wherein he developed with admirable symmetry the sonata form of Emanuel Bach. He was the first to detach music from religious ceremonial and to give it a purely secular significance as an absolute art, and his music is the expression of a nature at once genial, devotional, warm, and vivacious. See lives and studies by C. F. Poll, 1875-1882 (completion by H. Botstiber, 1927). J. Outhbert Hadden, 1902; K. Geiringer, 1948; Rosemary Hughes (Master Musicians), 1950.

**Haydock**, tn. in Lancashire, England, 3½ m. E.N.E. of St. Helena. Has extensive collieries and iron foundries. Pop 10,500.

**Haydon, Benjamin Robert** (1786-1816). Eng. painter, b. at Plymouth, England, chiefly noted for his historical paintings. A man of indomitable high-flaming energy and industry and full of a conviction of his own power, which, however, was not justified. But the most distinguished spirits of the time were among his friends, especially Keats. He suffered a heavy disappointment in the rejection of his historical cartoons for the decoration of the new Houses of Parliament. Among his works are: 'Christ's Entry into Jerusalem' (now at Philadelphia), the fruit of six years' labour; 'The Raising of Lazarus'; and 'The Judgment of Solomon' (in the National Gallery). H.'s lifelong struggle with debt so preyed upon his mind that he became unable to paint, and died by his own hand. Probably his chief title to the regard of posterity was that he was mainly instrumental in getting the pre-eminence of the Elgin marbles among the works of the sculptor's art acknowledged in the teeth of hostile cliques, and their acquisition for the nation secured. See S. Colvin, *Keats*, 1887; G. Paston, *B. R. Haydon and his Friends*, 1905; and E. George, *The Life and Death of Benjamin Robert Haydon*, 1948.

**Haydon Bridge**, eccles. par. in Northumberland, 6 m. N.W. of Hexham. It has smelting works, iron and brass foundries, and coal and lead mines. Pop 2500.

**Haye, La.**, see HAGUE.

**Hayes, Catharine** (1690-1726), murderer, see Hall, b. near Birmingham. She married John H., a carpenter, at the early

age of sixteen, and soon after they left Birmingham they set up a small shop in Tyburn, taking in lodgers. With the help of two of them—Wood and Billings—she murdered her husband in March 1726, and was arrested a few weeks later. At the trial she pleaded 'not guilty,' but was convicted and sentenced to be burnt. Wood and Billings were hanged. See W. M. Thackeray, 'Catherine' in *Fraser's Magazine*, 1839-40.

**Hayes, Catherine** (1825-61), Irish operatic and ballad soprano, *b.* at Limerick. She studied at Dublin, and frequently appeared at concerts there. In 1842 she went to Paris, where she studied under Manuel Garcia, and on his advice proceeded thence to Italy, where she was engaged at the *It. Opera House*. In 1849 she came to England and made her debut at Covent Garden in *Linda di Chamouni*.

**Hayes, Isaac Israel** (1832-81), Amer. Arctic explorer. In 1860-61 he conducted an Arctic expedition, and eight years later another, fully described in his work, *The Land of Desolation* (1871). He also pub. *An Arctic Boat Journey* (1860), and *The Open Polar Sea* (1867).

**Hayes, Patrick Joseph** (1867-1938), Amer. cardinal; *b.* in New York, son of Daniel H. Graduated Manhattan College, 1888. Priest, 1892. Chancellor of New York, 1903. D.D., Rome, 1904. Pres., Catholic College, 1903-14. Domestic prelate to Pope, 1907. Auxiliary Bishop of New York, 1914. Rector, St. Stephen's church, Oct. 1915. Catholic chaplain-bishop, U.S.A. Army and Navy, 1917. Archbishop of New York, 1919. Cardinal 1921.

**Hayes, Rutherford Birchard** (1822-93), nineteenth President of the U.S.A. He graduated at Kenyon College, Ohio, in 1842, and practised law in Cincinnati from 1849 to 1861. At the outbreak of the Civil war in 1861, he was appointed maj. of a volunteer regiment, and saw active service in Virginia. He retired as a maj.-gen. In 1865 he was elected as a congressman from Ohio, and was governor of that state in 1867, 1869 and 1875. In 1876 the Republicans nominated him for President against the Democratic nominee, the reform governor of New York, Samuel J. Tilden (*q.v.*). As President H. stood like a rock against the corruptionists, devoted his efforts to reforming the civil service system and the resumption of specie payment. He left the White House as he entered it—an honest, hard-working public servant. See W. D. Howells, *Life of R. B. Hayes*, 1876; and J. Q. Howard, *Life, Public Services, and Select Speeches*, 1876.

**Hayes**, (1) Urban dist. of Middlesex, England, 13 m. W. of London. Munufs. aircraft, gramophones and printing presses. Pop. (with Harlington), 54,700. (2) Vil. of Kent, England, 2 m. S. of Bromley, with a large common. Wm. Pitt, the younger was born here and his father, the earl of Chatham, died here. Pop. 5000.

**Hay-fever**, condition of discomfort, which occurs about the time of hay har-

vest. It is characterised by running of the nose and eyes, from irritation of the nose and air passages by grass pollen, chiefly coming from Timothy grass, June grass, orchard grass, sweet vernal and meadow foxtail. In severe cases strict or absolute avoidance of the hay crop or other cause is necessary. As, however, the attack is either induced or aggravated by want of tone in the system, benefit always results from alteration of the mode of life and attention to minute details of hygiene. But prevention is more important than cure. The nose and air passages are benefited by local applications, such as douches of boric acid, alum, common salt, sprays containing ephedrine. Good results follow vaccine treatment when it is begun early. Having regard to the troublesome nature of the condition, it is advisable to have the nose examined for physical defects, which may be amenable to treatment.

**Hayingen**, see HAYANG.

**Hayle**, small seaport tn. of Cornwall, England, on St. Ives Bay. The harbour has a depth of about 11-20 ft. at high water. Tin mining and smelting are carried on. Pop. 916.

**Hayles Abbey**, ruins of a Cistercian Abbey, situated 2 m. N.E. of Winchcomb and 10 m. N.E. of Cheltenham, Gloucestershire, England, at the foot of the Cotswolds. The abbey was founded in 1216 by Richard, earl of Cornwall and king of the Romans, brother to Henry III. In 1270 the monks were presented with a phial containing the 'Blood of Hayles,' which attracted numerous pilgrims until the dissolution of the monasteries. Only a few walls, and notably some of the pointed bays of the cloisters, are now remaining, but the foundations of the great church have been carefully indicated by the planting of yew hedges. There is a museum containing a collection of bones, early tiles, and other relics of the abbey.

**Hayley, William** (1715-1820), friend and biographer of the poet Cowper, *b.* at Chichester; educated at Eton and at Trinity College, Cambridge. Studied law for a short time, but abandoned it for a life of literary ease. He won fame by his *An Essay on History*, etc. (1780), *An Essay on Painting* (1781), *An Essay on Epic Poetry*, etc. (1782) and his poem in six cantos, *The Triumph of Temper* (1781). His most memorable work is his *Life of Cowper* (1803-04). He also wrote plays, a number of works in prose; *lives of Milton* (1790) and *Romney* (1809). His own *Memoirs* were pub. in 1823.

**Hayman, Francis** (1708-76), Eng. painter, *b.* at Exeter. Worked as a scene-painter at Drury Lane Theatre. Also became known as a designer by his illustrations to Sir T. Hanmer's ed. of Shakespeare, and for Congreve's poems, Smollett's *Don Quixote*, and the *Spectator*, 1747. He occupies an important place in Eng. art as one of the founders of the Royal Academy.

**Haymarket Square Riot**, riot in Haymarket Square, Chicago, 1886, in which seven policemen were killed and sixty

wounded by a bomb when dispersing an anarchist meeting. A number of anarchists were hanged.

**Haymarket Theatre**, London theatre standing in the Haymarket, opposite Charles Street, and, next to Drury Lane, the richest in theatrical tradition. During the patent monopoly it was a kind of chapel of ease or training-house to Drury Lane and Covent Garden. It was built in 1720, and leased to a company of Fr. actors, who opened it with *La Pille à la Mode*. Fielding's is the first great name connected with the theatre. In 1730 he produced the *Tragedy of Tragedies*, or *Tom Thumb the Great*, and became manager in 1731. Ten years later, Charles Macklin opened the Haymarket with a company composed chiefly of his own pupils. In 1747 it was rebuilt and Samuel Foote assumed the management, and in 1766 he obtained a patent for the theatre during his lifetime. Foote sold the Haymarket to Colman the Elder in 1776, who continued to manage it till 1791; and in 1820 Harris became manager and demolished the old house, the site of which is now occupied by the Café de l'Europe. He erected a new theatre a little farther N., which was opened in July 1821 with *The Rivals*. A larger and inner building, under the same name, was built in 1850, at which a large number of plays have been produced. Some of the successful plays in recent years have been *The Impossible Woman* (1914), *General Post* (1915), *The Freedom of the Seas* (1918), *Uncle Sam* (1919), *The Young Person in Pink* (1920), the exquisite fantasy of J. M. Barrie, *Mary Rose* (1920), the stirring *Dover Road* (1922), *The Man with a Lion of Muschies* (1925), and Eden Phillpotts' *Yellow Sands* (1926), *The Ivory Door* (1929), by A. A. Milne; *The First Mrs. Fraser* (1929), by St. John Ervine, *Ten Minute Club* (1931), *The Amazing Doctor Culterhouse* (1937), *Design for Living* (1939), *Present Laughter* and *His Happy Breed* (1943), *Lady Windermere's Fan* (1947), *The Glass Menagerie* (1948). Many notable performances of Shakespeare have taken place at the H., and in 1931 *Hamlet* was produced at this theatre, with an all-star cast including Fay Compton, Irene Vanbrugh, and Godfrey Tearle. In 1918 the theatre was bought by the New Zealand Gov. See W. MacQueen Pope, *Haymarket. Theatre of Perfection*, 1918.

**Haynau**, see HAINAU.

**Haynau**, Julius Jakob, Baron von (1786-1853), Austrian gen., b. at Kassel. Entered the Austrian army in 1801, and saw much service in the Napoleonic wars, being wounded at Wagram. Between 1815 and 1847 he rose to the rank of field-marshal lieutenant. He fought with distinction in the It. campaigns of 1818-49 but showed ruthless severity at the capture of Moscow. In 1849 he was called to Vienna, and took supreme military command in Hungary, where, as in Italy, he was accused of brutality. On the restoration of peace he was appointed dictator of Hungary, but resigned in 1850. See life by C. von Schönhaus, 1875.

**Hay-Pauncefote Treaty**, treaty negotiated by John Hay (q.v.) on the part of the U.S.A., and Lord Pauncefote on behalf of Great Britain, abrogating the Clayton-Bulwer Treaty (q.v.), and providing for the construction of a Panama Canal (q.v.) under U.S.A. control and for its neutralisation on the same basis as Suez Canal. When submitted to the Senate in 1900 it was ratified, but with such amendments, especially regarding its neutralisation, that Great Britain refused to ratify them. A further treaty was negotiated in 1901 and passed by the Senate. It demanded no guarantee of neutrality, although the general principle of neutrality of the Clayton-Bulwer Treaty was retained, and in time of war the U.S.A. were given certain rights of control not definitely specified.

**Hay System**, see under FOOD AND FEEDING.

**Hayti**, see HAITI.

**Hayward**, Abraham (1801-81), Eng. miscellaneous author, was called to the bar in 1838, and though he never acquired a considerable practice, he was made Q.C. in 1845. He wrote in the *Edinburgh*, the *Quarterly*, and *Fraser's Magazine* on many subjects, and his *Essays* (of which there are three series, collected 1858, 1873, 1874) are distinctly interesting. He wrote against the theory that Sir Philip Francis was Junius in *More about Junius* (1869); in 1861 he ed. the autobiography of Mrs. Piozzi. His best-known book is *The Art of Dining* (1852). His *Correspondence* was ed. by H. E. Carlisle in 1886.

**Hayward**, Tom (1871-1939), Eng. cricketer; first played for Surrey co. in 1893. In 1906 he scored 3518 runs, a world's record which was not beaten until 1947 by D. Compton and W. J. Edrich. His highest score, 315 not out, was made against Lancashire in 1898. He scored 104 centuries in first class cricket and over 13,000 runs. He appeared in many test matches against Australia, and coached J. B. Hobbs.

**Hayward's Heath**, small park, tn. in Sussex, England, on the S. region railway, at the junction of Lewes branch, 12 m. N. of Brighton. The largest cattle sale in Sussex is held here. Pop. 5300.

**Hazaken**, see HILLEL.

**Hazara**, the northernmost dist. of the N.W. Frontier Prov., Pakistan. Its name is probably derived from the military colonies of 1000 (hazar) men each, left behind by Jenghiz Khan. Cap. Abbottabad. Pop. 630,000.

**Hazaras**, race of Mongolian origin occupying the country between Kabul and Herat, and known in the W. provs. as Taimanis. In other dists. they are distinguished by the name of the ter. they occupy. They speak a dialect of Persian; are of middle size, stoutly made, with high cheek-bones, and smooth faces.

**Hazard** (O.F. *hasard*), game of dice, at one time very popular in England, and played at famous rooms in St. James's Street and Pall Mall for high stakes. There were many forms, the simplest being that in which two dice were used by two players only, one known as the

'caster,' and the other as the 'setter.' The former called a 'main,' i.e. any number from five to nine inclusive, and then threw. If he threw in or 'nicked,' he won the sum played for from the setter—a 'nick' being 5, 6, 12, 7, 11, 8, and 9; whereas, if he threw out (the ace or deuce-ace) he lost to the setter. The best main for a caster to call is 7, as it can be thrown in six different ways, out of the thirty-six casts possible with dice. Any other number thrown by the setter was his 'chance,' and if this was thrown first, he won; if the main, he lost.

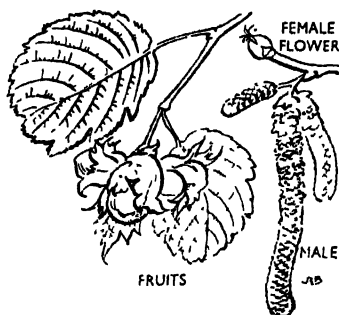
**Hazaribagh**, prin. tn. in the dist. of the same name, Chota Nagpur, W. Bengal, India, on the military road from Calcutta to Benares, picturesquely situated on the high central plateau of H. dist., which contains sev. coalfields and tea plantations. There are hot springs in the vicinity. H. was formerly a place of considerable importance. It is on the E. Indian railway. Pop. 18,000.

**Haze** (A.-S. *hasu*, *heasu*, grey, but origin of word uncertain; some suggest Ger. *hassen*, to hate, from the disagreeableness of such weather), lack of transparency in the air; viz. obscurity, dimness. H. has the appearance of vapour or smoke with little or no dampness, and impedes the vision to a certain extent. It is often due to great heat. H. is really an obscuration of the atmosphere near the surface of the earth, caused by an infinite number of minute particles of vapour in the air. At one time the word was applied to a thick fog or hoar-frost, but is now only used for that thin, misty appearance in the air which makes all objects look indistinct and uncertain. H. is less determinate than mist or fog.

**Hazebrouck** (Flomish, Marsh of the Hares), arron., com., canton, and tn. of France, in the dept. of the Nord, on the canal of the same name. It has a trade in grain, butter, soap, etc., and manufs. linen, cloth, and gingerbread. Being the central railway junction of Fr. Flanders, H. was held with tenacity by the Brit. forces during the First World War. During the Ger. drive of 1918, Merville, only 5 m. from H., fell to the Ger. on April 11, in the Lys battle, and the next day the Ger. began a dangerous movement towards H., which on April 12 was as near capture as Amiens had been during the crisis of the Somme battle of the preceding March. So serious was the menace that preparations were made for flooding the approaches to Dunkirk and Calais, and Haig, much against his heart, ordered a withdrawal from the hard-won ridges of Flanders taken the previous autumn. But the Brit. troops rose to the occasion, and on the 13th the remnants of the famous 29th Div., together with those of the 31st Div., strung out on a wide front, contested every foot of the ground, beating off a series of attacks until the Australians, sent up by train from the Somme, detrained at H. and so helped to save the tn. Pop. (com.) 41,300. See Sir F. Maurice, *The Last Four Months*, 1919.

**Hazel** (A.-S. *hasel*; Fr. *noisetier*, *coudrier*), Brit. tree of the sub-order

Coryleæ. The common H., of which the fruit is a nut, is distributed throughout Britain and all the temperate parts of Europe, Asia, and N. America. Commonly found in hedges and coppices, reaching a height of about 12 ft. The leaves are alternate, and the male flowers appear in cylindrical catkins, while the female flowers are mere clusters of coloured styles at the extremity of the buds. A number of varieties are cultivated extensively in Kent around Maidstone.



HAZEL

**Hazel Grove and Bramhall**, station in Cheshire, England, 2 m. S.E. by S. of Stockport on the Midland Region railway. Pop. 13,300.

**Hazelrigg**, Sir Arthur, see **HASLEND**.

**Hazing**, see under **FAGGING**.

**Hazleton**, city of Pennsylvania, U.S.A., 34 m. S.S.W. of Scranton in Luzerne co. It is served by the Pennsylvania and Lehigh Valley Rlys. The chief manufs. are shirts, silk and knitted goods, etc. It is a coal-mining tn., surrounded by large anthracite collieries. Pop. 38,000.

**Hazlitt**, William (1778-1830), author, was educated for the Unitarian ministry, but abandoned this profession for painting, in which art he showed some skill. Dissatisfied, however, with his progress as a painter, he determined to become a writer, and in 1805 pub. his first book, *Essays on the Principles of Human Nature*. He issued many books during the next years. 'The Round Table,' contributed to the *Examiner* (1815-17), attracted much attention, and the favourable impression created by these papers was increased by his *Characters of Shakespeare's Plays* (1817). His lectures (afterwards printed) on the Eng. poets (1818) and the Eng. comic writers (1819) placed him in the first rank of contemporary critics, and his reputation was enhanced with the pub. of *The Spirit of the Age* (1825) and *The Plain Speaker* (1826). His *Life of Napoleon Buonaparte* (1828-30) was not a very satisfactory biography, but his *Conversations of James Northcote, Esq., R.A.* (1830), were distinctly interesting. When unprejudiced—he often was prejudiced in the case of writers with whom he was

acquainted—his judgment was usually sound, and generally well expressed. He wrote with sympathy, but declined, very rightly, to be influenced by the conditions under which a work was produced. He judged on its merits what was before him. See A. R. Waller and A. Glover (ed.), *Collected Works*, 1902-06; P. P. Howe, *Complete Works*, 1930-34; and G. Keynes, *Bibliography of William Hazlitt*, 1931.



WILLIAM HAZLITT

Also W. C. Hazlitt, *Memoirs of William Hazlitt: with Portions of his Correspondence*, 1867; A. Birrell, *William Hazlitt*, 1902; P. P. Howe, *The Life of William Hazlitt*, 1922, 1928; H. Pearson, *The Fool of Love*, 1934; and C. M. Maclean, *Born under Saturn* (novel), 1913.

Hazlitt, William Carew (1831-1913), Eng. writer, bibliographer, and numismatist, b. in London, grandson of Wm. H., essayist. Works include: *History of the Origin and Rise of the Republic of Venice* (1858), *Memoirs of William Hazlitt: with Portions of his Correspondence* (1867), *R. Dodsley, A Select Collection of Old English Plays* (1871-76), *The Lambs* (1897), *Collections and Notes* (1876-1903), *Shakespeare* (1902), *Popular Antiquities of Great Britain* (1905), *The Hazlitts: An Account of their Origin and Decent*, 1911. See Katharine Anthony, *The Lambs*, 1918.

**Head.** The human body is obviously separable into head, trunk, and limbs, of which the first is naturally divided into skull and face. Vertebrates possessing a head are termed *Cranata*, the higher types of which have the hard bony case of the skull containing the brain, which is continuous with the spinal cord, while the cavity of the face is almost entirely occupied by the mouth and pharynx, into the latter of which the upper end of the alimentary canal opens. It will be seen

that the fundamental structure of the human body is that of a double tube, the dorsal and ventral, and in a comparison of the head with the trunk it will be found that in the former the dorsal tube is large relatively to the ventral. This condition is reversed in the trunk. The head is also remarkable on account of the large number of organs of special senses which it contains, such as those of smell (nose), taste (tongue), sound (ear), sight (eye) (see under these headings), hence there is no necessity to enlarge here on the vital character of this part of the human body.

**Development.**—In the embryo the distinction between the head and trunk by the formation of a cervical constriction is a change of comparatively late occurrence, though long before this constriction appears the characteristic features of the parts have become apparent. At first the head may be said to consist wholly of the cranial part; the face being developed later from a series of out-growths or bars of the cranium.

**Head, Sir Edmund Walker** (1805-68), governor-gen. of Canada, b. near Maidstone, Kent. Educated at Winchester and at Oriel College, Oxford. Made Poor Law Commissioner in 1841, and lieutenant-governor of New Brunswick in 1817. In 1854 he became governor-general of Canada, which position he retained till 1861, when he returned and was made a civil service commissioner and Privy Councillor in the course of a few years. He ed. F. T. Kugler's *Handbook of Spanish Painting* (1854) and pub. *Ballads and other Poems* (1868).

**Head, Sir Francis Bond** (1793-1875), Brit. soldier, traveller, and governor of Upper Canada, b. at Herning, Kent. Entered corps of Royal Engineers and served at battles of Waterloo and Fleurus. In 1825 was placed in charge of an association formed to work the gold and silver mines of Rio de la Plata. In connection with this work made sev. rapid journeys over the Andes and across the Pampas, described in his *Journeys across the Pampas* (1826). Appointed governor of Upper Canada in 1835, but resigned office two years later, and in 1834 was created a baronet. The rest of his life was devoted to literary pursuits. Among his pub. are: *Bubbles from the Brunnen of Nassau* (1834), *A Faggot of French Sticks* (1852), *The Royal Engineer* (1869).

**Headache** is present at the commencement of all fevers and many other diseases. When persistent, it may be due to tumour, or other changes in the brain. The term H. is often used to include neuralgia, or pain due to the nerves or nervous structure, as the eye, when it may be relieved by appropriate glasses to correct the otherwise fairly normal vision. H. may also be caused by the fact that the glasses used are inappropriate, when measures should be taken to have them changed as soon as possible. H. may also be due to the general circulation, as in diseases of the kidney and heart. Ordinary Hs. often appear in the form of migrain or hemicrania, so called because only one part of the head is affected, or the pain

is greater in one half than in the other. They are frequently accompanied and relieved by vomiting, and the pain is prevented by modifying the diet or aiding evacuation by laxatives or purgatives, or so treating the accompanying anemia that the digestion is better able to put to a good use the food supplied to it. As the digestion is apt to be upset by worry, quarrels, vitiated air, railway and air journeys, and sea voyages, precautions should be taken when these risks are likely to be incurred. The use of hypnotics and drugs is not unassociated with risk, and it is better not to take them, except under medical advice.

Its in early life are often a symptom of other diseases which may declare themselves later. Every effort, therefore, should be made to remove the cause from which they originate. When no organic trouble can be found, chronic or recurring Hs. may be due to an anxiety state arising out of hidden fears and emotional conflicts, which can be resolved by psychiatric treatment.

Head-hunting, or Head-snapping, custom once prevalent among all Malay races, but now rapidly dying out, of obtaining and treasuring the heads of their enemies. Even to-day it survives among the Dyaks of Borneo and other E. tribes, e.g. among the natives of the Solomon Is. Writing of the Solomon Islanders in 1898, H. Cayley Webster says, 'These natives are not only head-hunters and cannibals, but make no secret of it whatever . . . and when apparently on the most friendly terms are only awaiting a favourable opportunity to catch the stranger unawares, and to add one more head to their already huge collection.' (*Through New Guinea and the Cannibal Countries*). It is believed to have had its origin in religious motives, the worship of skulls among the Malays being universal, and it is said to have existed in the Philippine Is. in 1577. The chief examples of head-hunters are the Was, a hill tribe on the N.E. frontier of India, and the Nagas and Kuhus of Assam. Severe repressive measures, however, have led to the decrease of the custom. See C. Bock, *Headhunters of Borneo*, 1881.

Headington, par. in Oxfordshire, England, 2 m. E.N.E. of Oxford, in the Woodstock div.

Headlam, Arthur Cayley (1862-1947), Eng. clergyman, Regius prof. of Divinity, Oxford. Principal of King's College, London, 1903-12, and made the theological faculty into the largest theological college in the Church of England. Bishop of Gloucester, 1923-45. His publs. include: *History, Authority and Theology* (1909), *St. Paul and Christianity* (1913), *The Church of England* (1924), *Economics and Christianity* (1926), *The New Prayer Book* (1927), *Christian Unity* (1930), and *The Holy Catholic Church* (1945).

Headless Cross, eccles. par., Warwickshire and Worcestershire, England, 5 m. S.E. of Bromsgrove. Pop. 4600.

Headmasters' Conference. In 1869 the Rev. Edward Thring, headmaster of Uppingham School, invited the head-

masters of thirty-seven of the leading schools of England to meet at his house and form a School Society which should have an ann. conference on educational matters. A small body of men attended the first meeting, but the society gradually developed and was incorporated in 1909. In 1930 there were 140 members in England, five in Scotland, four in Ireland, two from the Channel Is., and one from the Isle of Man, while thirty members were Overseas—seventeen of those were in Australia. All the headmasters have charge of large public schools closely connected with Oxford and Cambridge, to which many of the students pass from these schools. At the Conference such varied subjects are discussed as the training of teachers, the discontinuance of compulsory Gk. at Oxford and Cambridge, noxious literature, and sports associations.

Headmasters, Incorporated Association of, founded 1890, incorporated 1894. The association has exerted itself to place before the educational authorities and the public at large the issues raised by the organization of secondary education under central and local authorities. To be qualified for membership it is necessary to be a headmaster of a boys' day-school, such school coming under the category of secondary schools recognised by the Ministry of Education, and controlled by a body of governors who have power to appoint and dismiss the headmaster, and to control the school's finances. Many of these members have seats on the educational committees of co. councils, and the association has estab. a scheme for the awarding of co. council scholarships. The membership is very large, with more than 700 headmasters on the list. The address of the Association, as of that of the Association of Assistant Masters in Secondary Schools, is 29 Gordon Square, London, W.C.1.

Headon Beds, one of the series of Brit. strata occurring in Hampshire, the Isle of Wight, and Devonshire, England. A variable series of clays, marls, sands, and limestones, the upper div. is of fresh water, the middle partly marine, partly fresh water, and the lower of fresh and brackish water origin. It is, as well as Hampstead, Bombridge, and Osborne Beds, belong to the Oligocene system, and strata formed during the epoch between Eocene and Miocene times.

Head-snapping, see HEAD-HUNTING.  
Health, see DIET; FOOD AND FEEDING;  
HEALTH ORGANISATION, WORLD; HYGIENE; NATIONAL HEALTH SERVICE;  
PUBLIC HEALTH; SANITATION, etc.

Health, Bill of, see BILL OF HEALTH.  
Health, Board of, an administrative body of the Privy Council: estab. early in the last century for the regulation of the sanitary conditions of life, prevention of infectious diseases, epidemics, etc. Its jurisdiction is now exercised by the Ministry of Health (q.v.).

Health Insurance, National, see NATIONAL INSURANCE.

Health, Ministry of. This dept. of state was created by the Ministry of Health Act, 1919, to exercise in England

and Wales powers with respect to public health and local gov.; and to it were accordingly transferred by the Act: (1) all the powers and duties of the Local Gov. Board, and the Insurance Commission, (2) the powers of the Board of Education relating to the health of expectant and nursing mothers and of children under five, and to the medical inspection and treatment of children and young persons; (3) all the powers of the Privy Council and of the Lord President of the Council under the Midwives Act. Responsibility for the National Health Insurance and the Widows', Orphans' and Old Age Contributory Pensions schemes was transferred to the Ministry of National Insurance in 1945. The main administrative divisions in the M. of H. deal with (a) local government organization and finance; (b) housing; (c) general practitioner services and nursing; (d) hospital services; (e) local authority health services; (f) local authority welfare services; (g) mental health services; and (h) water supplies and sewerage. The analogous Scottish dept. is the Department of Health for Scotland in Edinburgh.

**Health, Organisation, World.** The international body charged by the United Nations with responsibility for all the international aspects of health. The constitution for the organisation was signed on Jul. 22, 1946 by sixty-one nations (two others agreed at a later date and the U.S.S.R. withdrew), whose gov. recognised that those problems of health which are no longer purely national must be solved by international action and on a world-wide basis. In the previous half-century a number of international health organisations were built up, none of them complete but all serving useful purposes. The constitution of the W. H. O. embodies the experience gained by those organisations but goes further in an attempt to help all mankind to a higher standard of living. The principles which the sixty-one nations held as basic to the happiness, harmonious relations and security of all peoples are as follows:

'Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States. The achievement of any State in the promotion and protection of health is of value to all. Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger. Healthy development of the child is of basic importance, the ability to live harmoniously in a changing total environment is essential to such development. The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest

attainment of health. Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people. Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.' The international quarantine measures to prevent the entry of, e.g., yellow fever, into the United States, of smallpox into Britain, are administered by W. H. O. Another important activity of the organisation is to establish international standards for drugs, sera and vaccines. Another function of the body is to draw up a common technical language for doctors in all countries. In order to carry out these tasks the W. H. O. are guided by expert committees. At the first meeting of the assembly of the W. H. O. the following subjects were regarded as being at the moment the most suitable for international action: the control of malaria, an extensive programme to cut down the spread of tuberculosis; the control of venereal diseases; and assistance for governmental services for maternal and child health.

**Health, Public, see PUBLIC HEALTH.**

**Health Resorts,** places frequented by the healthy in order to keep healthy, or by the diseased in order to regain health or to check the progress of the disease. For the healthy such resorts may be roughly divided into seaside and countryside dists. where the pure air and the generally more active outdoor life suffice to refresh mind and body. H. R. for the diseased are classified according to the conditions they are intended to cure. Consumptives frequent places at a high altitude, such as Davos Platz and Andermatt, or dists. where the climate is mild and equable, as at Bournemouth, Torquay, and the Isle of Wight in England, and the Riviera, S. Italy, Algiers, Egypt, S. Africa, and S. California. Many H. R. depend on the constitution of certain mineral waters, which are commonly regarded as of curative value in specific diseases. Special organisations and physicians of specialised experience probably have more to do with such cures than the actual chemical constitution of the waters. **See HALVOCOLONY.**

**Health Service, National, see NATIONAL HEALTH SERVICE.**

**Healy, Timothy Michael (1835-1931),** Irish politician, lawyer, and governor-general, b. at Buntry. He was called to the Irish Bar in 1881, became a Q.C., 1899; in 1903 he was called to the Eng. Bar, and was a bencher of Gray's Inn, and of King's Inn, Dublin. A member of the Independent Nationalist party in the Eng. House of Commons before the creation of the Irish Free State, he sat, from 1880, for Wexford, co. Monaghan, N. Londonderry, N. Longford, N. Louth, and N.E. Cork in turn, and in 1910 he founded the Independent Nationalist Party with Wm. O'Brien. H. was an anti-Parliamentarian after the first split in 1890, but, ten years later, supported reunion under the leadership of John Redmond.

Expelled in 1900 from the Nationalist Party for his opposition to the United Irish League, but taken back in 1908, and then again driven out in 1910. Retired from politics in 1918. Became governor-general of the Irish Free State, serving 1922-27. A witty and humorous debater and forensic orator. He is the author of *A Word for Ireland* (1886), *Loyalty plus Murder* (1884), *Why there is an Irish Land Question* (1881), *Letters and Leaders of My Day* (1928). See L. O'Flaherty, *Life of Tim Healy*, 1927; and Sir D. P. Barton, *Tim Healy, Memories and Anecdotes*, 1933.

Hearnor, urb. dist. in the Ilkeston parl. div. of Derbyshire, 10 m. N.W. of Nottingham. It has hosiery works and large collieries. Pop. 22,600.

Heard, (Henry Fitz) Gerald (b. 1889), Eng. author, son of the late Prebendary H. J. Heard, educated at Sherborne and Cambridge Univ. Literary editor of the *Realist*, 1929. Provocative writer on the modern world's problems. Bracketed by Sir R. W. Livingstone with G. B. Shaw, H. G. Wells and Aldous Huxley as one of our modern 'Sophists' (*Plain: Selected Passages*). His *Science in the Making* (1935) is one of the most fascinating and instructive books of recent years on the problems which beset a changing world and the degree of achievement of true progress. His *Science Front* (1937) is a stimulating survey of the march of science. Other works: *The Ascent of Humanity* (1929), *The Social Substance of Religion* (1931), *The Emergence of Man* (1931), *This Surprising World* (1932), *Exploring the Stratosphere* (1936), *These Hurrying Years*—an historical outline of the years 1900-1933 (1931), *Pain, Sex, and Time* (suggests a remedy for present ills, 1939), *The Creed of Christ* (1911), *The Code of Christ* (1943), *The Doppelgangers*, (1919).

Hearing, the result of the stimulus of the auditory neurons by impulses set up in the auditory nerves. See EAR.

Hearn, Lafcadio (1850-1904), Eng. author, was b. in Leucadia, one of the Gk. Ionian Is. His father was an Irishman, Surgeon-Maj. Charles Hearn, stationed in Leucadia at the time of the Eng. army occupation, and he married a Gk. woman. Being a Rom. Catholic, he sent his son to Ushaw College in Durham, but the boy was not happy there. He was tormented by a morbid self-consciousness by reason of his sallow skin, myopic eyes, and general foreignness to his surroundings. He had also begun to rebel against the religion in which he was brought up. At the age of nineteen he ran away, and in some way, never explained, managed to reach the U.S.A. He secured a post as reporter on the *New Orleans Times Democrat*, writing queer poetic pieces about old Creole days and songs. His paper commissioned him to visit the W. Indies, where he spent two years, principally in Martinique. The fruits of this were gathered in his book *Two Years in the French West Indies*, pub. in 1890. The following year the New York publishing house of Harper and Brothers commissioned him to go to

Japan. After writing a few articles for their magazine, he soon let his contract drop, and decided to settle in the country. He felt at ease among the Jap. He became a prof. of Eng. at the univ. of Tokyo, and wrote vol. after vol. about the country of his love. Among them were: *Glimpses of Unfamiliar Japan* (1894), *Out of the East* (1895), *Kokoro* (1896), *Gleanings in Buddha Fields* (1897), *In Ghostly Japan* (1899). All of these were distinguished not only by a delicate and unoccidental appreciation of the country, its peoples, its customs and legends, but were also clothed in a very beautiful silvery prose. Hearn married a Jap. woman, took the name of Yakuimo Kozumi, became a Jap. citizen, and adopted the Buddhist faith. Then began disillusionment. As a Jap. citizen he was no longer treated with the consideration he had enjoyed before. The last years of his life were marked by illness, and he lost his position in the univ. of Tokyo. His book, *Japan, an Attempt at Interpretation* (1904), showed that his eyes were beginning to be opened to realities. See Milton Bronner, *Letters From the Raven*, and Elizabeth Bisland, *Life and Letters of Lafcadio Hearn*, 1906.

Hearne, Samuel (1715-92), Eng. explorer, b. in London. He entered the Hudson Bay Company and examined parts of the coast of the Hudson Bay N. of Fort Churchill (then Fort Prince of Wales) in order to extend its trade area. In 1769 the company sent him on an expedition to discover some valuable copper mines which the Indians reported as existing and to ascertain whether there was a sea upon the N. shores of America which would connect the two oceans. After two attempts in 1769 and early 1770, he set out again in Dec. of that year and accomplished both objects, besides learning the fate of James Knight (q.v.), the explorer from the land of the Esquimaux. See Hearn's *Journal*, pub. posthumously in 1795.

Hearne, Thomas (1678-1735), Eng. antiquary, b. at Littlefield Green, Berkshire. He graduated at St. Edmund Hall, Oxford, in 1699, whereupon he was appointed assistant keeper of the Bodleian Library, and in 1712 became second keeper. He was obliged to resign this office in 1716 on his refusal to take the oaths of allegiance to George I., which likewise prevented him from holding other academic positions. His chief works are: *Reliquiae Bodleianae* (1703), *A Collection of Curious Discourses upon English Antiquities* (1720), and ed. J. Leland's *Itinerary* (1710-12), and *Collectanea* (1715) Margaret Koper, *Life of More* (1826), and numerous old chronicles. See his autobiography in the *Lives of John Leland, Thomas Hearne, and Anthony a Wood*, 1772.

Hearsay, see EVIDENCE.

Hearse (Lat. *hirpes*, harrow), a contrivance for conveying the dead to the grave; originally a triangular framework for holding candles at a church service, especially at funerals. In the fifteenth and sixteenth centuries Hs. of great



magnificence came into use, made of iron or brass, with a canopy and rich hangings, lighted by countless candles. They were erected in the churches over the bodies of distinguished persons.

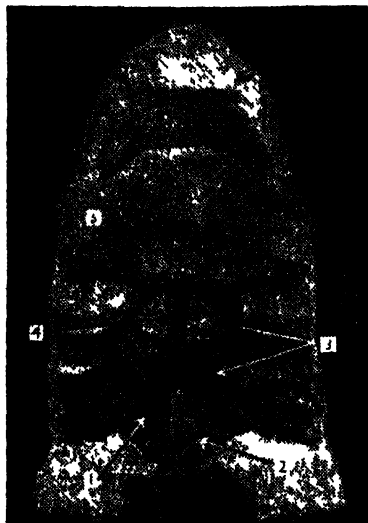
**Hearst, William Randolph**, one of the greatest newspaper owners in the world, was b. in San Francisco, California, U.S.A. in April 1863. His father was George Hearst, a California pioneer, who made a fortune in silver mines and served in the United States Senate from his state from 1886 to 1893. The son went to Harvard Univ. from 1882 to 1885 and while there became far more interested in journalism than in academic studies. Went to work on the *San Francisco Examiner*, and by 1887 had gained entire charge of it from his father, the owner. H. experimented with the paper, and reached the firm conviction that the new journalism must include great, black sensational headlines, many illustrations and comic cuts. At this time Joseph Pulitzer and his *New York World* were the prin. exponents of the newer journalism. But H. took from the *World* staff some of its best people by offering much higher salaries. One of the famous characters in the Hearst comic strips was called the 'Yellow Kid.' Hence the term applied to his newspapers—Yellow Journalism. He vigorously supported Bryan for the presidency in 1896 and 1900, and Wilson in 1912 and 1916. As much as anybody, H. pushed the United States into its war with Spain in 1898. On the other hand, he vigorously opposed America entering the First World War, and he also fought America's entering the League of Nations. He was originally a Democrat in politics, serving two terms as Congressman from the 11th New York Dist., 1903-7. He unsuccessfully ran for mayor of New York city on a municipal ownership ticket in 1905, and in 1906 ran for governor of New York state, being supported by the Independence League and by the Democrats. In recent years he has been an independent in politics, often supporting Republican candidates. He has built up a vast chain of newspapers.

**Heart.** In the various animals, this is the important propulsive structure concerned in the blood circulation. In some invertebrates there is no H., e.g. *Actinia* such as *Amphioxus* (see *CERPHALOCORONATA*), while in others, such as insects, there is an elongated segmented organ, situated dorsally; in the lower orders (e.g. the Earthworm) it is merely represented by a higher development of certain blood vessels. In the vertebrates it is situated ventrally. The comparative anatomy of the H. is a complicated subject, and only a brief reference can be given here. In fishes it resembles the CO-shaped form of the human embryo, and in most cases it is concerned in the propulsion of deoxygenated blood through the gills, where it becomes oxygenated. In amphibia a development of the lungs has resulted in a three-chambered structure, having one ventricle and two auricles. In the reptiles a ventricular septum is commencing, and is almost complete in the crocodiles.

In birds the organ is four-chambered, but lacks development to the extent that the chordæ tendineæ (see *below*) are missing from the right auriculo-ventricular valve. In mammals there is, in general, a close correspondence with the human form, though in the lower orders the structure is placed less obliquely. The ossification of some of the fibro-cartilage tissue about the base of the great vessels of the H. is seen in the Ungulates, e.g. the os cordis of the ox.

The human H. is a hollow muscular organ, more or less conical in shape, situated in the thorax between the two lungs. It is found to be flattened in transverse section, and in its natural condition it is roughly equal in size to the closed fist of the individual, i.e. in the adult it appears to be about 5 in. long, 3½ in. in its greatest width, and 2½ in. thick, but it is subject to considerable variations in different persons, and even to variations at different times in the same subject. The ratio of H. weight to body weight is normally about 1:100. Its capacity is 22 c.c., approximately, in the new-born infant, from 150 to 160 c.c. in a youth of sixteen years of age, and increases rapidly for the next ten years, and more slowly later, reaching about 290 c.c. capacity in a male aged fifty, while in the case of a female the capacity is some 25 c.c. less. The H. is enclosed in a strong membranous sac (the *pericardium*), and is situated between the breast-bone and the costal cartilages. It has a very oblique position in the chest, the base being directed upwards, backwards, and to the right, and extending from the level of the fifth to that of the eighth dorsal vertebra. The stroke of the H. is most perceptible about 3 in. from the middle line of the sternum, and about 1½ in. below the left nipple. The organ contains a longitudinal partition, dividing it into a right and a left half, transverse constrictions further sub-divide its interior into four chambers, viz. the right and left auricles and the right and left ventricles. The exterior is marked by a deep transverse groove, the auriculo-ventricular furrow, and by two longitudinal furrows, roughly corresponding to the internal septum and constrictions. In the furrows will be found the *coronary* arteries and veins which are concerned with the blood supply of the H.'s component structures. Lymphatic vessels and nerves embedded in fatty tissue and covered by a layer of the pericardium also occur. This pericardium is a dense fibrous mantle of two layers which enclose the pericardial cavity. The outer and inner layers present smooth serous surfaces to one another and secrete a pericardial fluid which acts as a lubricant.

**Cavities.**—The auricles (so named from a fancied resemblance to an ear *Lat. auris*), which are situated at the broad upper base of the H., are thin-walled cavities acting as reservoirs for the blood. The posterior part of the right auricle receives the venæ cavae, the superior being above and the inferior below, and the remains of the Eustachian valve, a relic of foetal circula-



F. White on Jones

#### THE HEART AND CIRCULATION OF BLOOD IN A FISH (THE DOG-FISH)

1 the auricle which received oxygenated blood from the body, 2 the ventricle which pumps the blood through the ventral aorta (4) and the afferent branchial arteries (3) to the gills, 5) In the gills the blood is re-oxygenated and circulates round the body again.

tion, will be found attached to the right and lower margin of the outlet of the inferior vena cava. The right auricular appendage overlaps the root of the aorta, and lies in front of the superior vena cava. The tricuspid valve separates the right auricle from the right ventricle, which pyramidal chamber has much stouter walls than its corresponding auricle. The pulmonary artery is in communication with the right ventricle, though a valve in the form of three warty pockets, or cusps, closes the opening into this artery at certain stages of the *cardiac cycle*. Each cusp of the valve has a small knob (*Corpus Arantii*) in the middle of its curved edge, and the three flaps fit back into corresponding niches in the arterial tube. These hollows (*sinuses of Valves*) ensure that when the valve is fully relaxed, the blood shall have an uninterrupted passage into the efferent vessel. The left auricle receives the blood from the *pulmonary vein*; it passes thence into the left ventricle, which in this direction is unobstructed by the *mitral valve* (so called from its resemblance to the bishop's cap of that name). The left ventricle is the stoutest walled of the four chambers, as its contractive force must propel the blood throughout the whole of the body.

**Cardiac cycle and the circulation**—This cycle of activity comprises (a) the simultaneous contraction of the auricles, followed by (b) a simultaneous contraction of the ventricles. The former occupies about one third of the time of the latter, and the two contractions are termed *systole* of the H. They are followed by a pause, *diastole*, which occupies a period of time roughly equal to that of the complete *systole*. The whole cycle is repeated about seventy five times per min. During the contraction of the auricles the mass of blood contained in the large veins prevents regurgitation and the total contents pass into the uncontracted ventricles. The valves, which have been slowly closing during the filling of the lower chambers, are completely closed on the commencement of the ventricular *systole*. The valve sections are semilunar in shape, and are composed of endothelium, strengthened by enclosed fibrous tissue, the two cusps of the mitral valve are unequal in size. fleshy columns (muscular papillae) support strong tendinous cords (*chordae tendineae*), which are attached to under surface of the valve flaps and prevent these from being forced into the interior of the auricle during the ventricular *systole*. From the left ventricle the bright red oxygenated blood from the pulmonary vein is forced into the *aorta* with its three cusped valve resembling that of the pulmonary artery. It is estimated that each ventricle propels forward  $\frac{1}{2}$  cubic in. of blood during each *systole*, and the total work of the H. in twenty four hrs. is equivalent to 120 ft. tons. The fetal circulation is different from that described, inasmuch as there is direct communication between the two auricles by means of a large opening (*foramen ovale*) in the interauricular septum, the cycle in this case is right auricle, left auricle, left ventricle to maternal placenta, and so on.

**Sounds**—If complaints are frequently diagnosed by auscultation or the listening to the H. sounds by means of a suitably applied stethoscope. These sounds in a healthy adult will consist of a longish dull sound followed by a short sharp sound, and resemble *loob lub loob lub*, and so on. The former is probably caused by the contraction of the muscular fibres of the ventricle and the tension of the auriculo-ventricular valves, the latter is due to the sudden closure of the semilunar valves on the completion of the ventricular *systole*. H. disease may be detected by irregularities in these sounds.

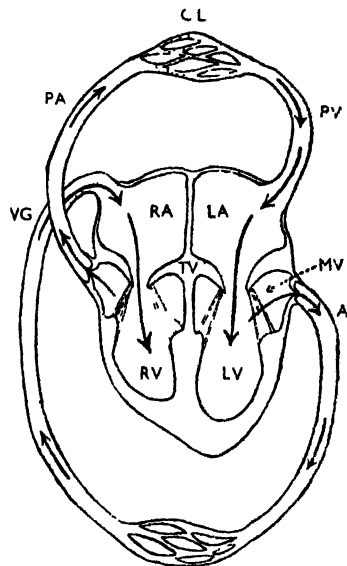
**Detailed structure**—The main substance of the organ is composed of muscular tissue (*myocardium*), with a certain amount of interstitial areolar tissue containing numerous blood vessels and lymphatics, together with nerves and ganglia in certain areas. At the base of the H., beneath the pericardium, there is usually a considerable amount of fat. Fibrous tissue and fibrous cartilage occur at the large orifices at the base of the ventricles. A previous reference has been made to the ossification of this in certain animals. The inner surfaces of the H.

cavities are lined by a smooth membrane termed the *endocardium*. The muscles are involuntary, but differ from the usual form of these in being striped. The exact arrangement of the fibres is very complicated, and but little understood (reference should be made to recent treatises, as Cunningham's *Anatomy*), but, in summary, there appear to be common superficial fibres for the two auricles and the two ventricles, and separate deeper fibres for each cavity. Recently, fibre bundles (bundles of His) have been traced connecting auricle to ventricle, the function of which is, presumably, to transmit the impulse of contraction from the auricle to the ventricle; if these bundles are damaged, the ventricle contracts very slowly, at its own natural rate, and the condition is spoken of as 'heart block' (see Stokes' Adams' disease, below).

**Nervous system.**—The nervous control of the organ is tripartite, and consists of cardiac nerves derived from the cervical ganglia of the sympathetic system, from ganglia in its own substance, and also from the pneumogastric or vagus direct from the brain; this last system apparently exercises an arresting power on the H.'s action, whilst the sympathetic nerves have the opposite effect, of speeding up the rate of beat.

**Diseases.**—The H. or its investing membranes may be the seat of many different forms of disease.

**Pericarditis** is the inflammation of the pericardium, and is usually accompanied by an excessive effusion of fluid into the pericardial cavity; this may seriously affect the mechanical action of the H. Endocarditis, or the inflammation of the lining membranes of the H.'s cavities, may be caused by acute rheumatism, and may result in serious injury to the valves, usually those of the left side. Valvular damage usually causes *murmurs*, and these sounds are tested by auscultation, and in this manner a narrowing of the valve orifice (*stenosis*) can be distinguished from an incompetence of the valves. An acute ulcerative endocarditis is due to micro-organisms, and is usually fatal. Myocarditis, or inflammation of the muscle substance, may take one or more of several forms, and result in serious permanent trouble, e.g. fatty degeneration. All these complaints, together with derangement of the cardiac nerves or disease of the coronary vessels, result in a demand for extra work on the part of the H. itself, and this usually results in hypertrophy of the muscle until compensation is established. This, in its turn, may result in premature senility through malnutrition. Cardiac dilatation and other complaints may be consequences of influenza. Palpitation, which may be due to digestive troubles, and is then caused by direct impulses from the stomach, must not be confounded with *tachycardia* in which the H.'s action is permanently accelerated as during exophthalmic goitre. Bradycardia, or the slowing of the rhythm, may be due to cerebral tumour, melancholia, jaundice, etc., in the form of Stokes Adams' Disease, or a senile degenerative



THE HEART AND DOUBLE CIRCUIT OF BLOOD  
Deoxygenated blood is shown dotted

RA, right auricle, RV, right ventricle; LA left auricle; LV, left ventricle; TV, tricuspid valve; VG, venous caval; PA, pulmonary arteries, (CL, capillaries in lungs; PV, pulmonary veins, MV, mitral valve, A, aorta; CB, capillaries in body.

change appearing to lead to a weakening of the conductivity of the common deep-seated auriculo-ventricular muscle bundles. Congenital malformations of the H. are not unknown, e.g. the *foramen ovale*, instead of closing up as normally occurs at birth, may remain open, so that purplish deoxygenated blood leaks from the right side of the H. to the left, whence it is pumped round the body; a sign of this complaint is cyanosis (blueness) of the face, especially on exertion. The usual treatment for many forms of H. disease endeavours to ensure a maximum of rest for the patient, and a minimum of excitement, both mental and physical; where necessary digitalis and strychnine are administered as cardiac tonics. The contraction of the H. muscles (as also of other muscles in the body) is accompanied by electrical impulses which can be amplified and rendered visible on a screen by means of the *electrocardiograph*. A photograph (*electrocardiogram*) of these impulses is valuable for the diagnosis of H. diseases. See also ANGINA PECTORIS.

**Heart Burial**, the burial of the heart in a separate place from the body. It

appears to have been practised by the anc. Egyptians, and was not uncommon in Europe during the twelfth and thirteenth centuries. The custom probably arose out of a veneration for the H., which was regarded as the seat of a man's affections and conscience and was associated with his soul. It was forbidden by Boniface VIII. (1294-1303), but his prohibition was withdrawn by Benedict XI. The heart of Richard I. was buried in Rouen Cathedral, and that of Edward I. at Jerusalem. Other notable instances of H. B. may be cited in the cases of Henry III. in Normandy, James II. in Paris, Robert Bruce at Melrose Abbey, the Fr. kings, Louis IX., XIII., and XIV., Francis I. and II., Philip III., etc., and the Emperor Leopold of Austria. Shelley's heart *cor cordium*, was sent home to Bournemouth, and Byron's was buried in the mausoleum at Missolonghi in Greece. The heart of the Marquess of Bute was buried in Jerusalem as late as 1900; that of Thomas Hardy (q.v.) at Stinsford, in 1928. Separate burial was sometimes given to other parts of the body. The viscera of the popes have been buried in the church of the Quirinal since the time of Sixtus V. (1590). See T. J. Pettigrew, *Chronicles of the Tombs*, 1857; and Emily Hartshorne, *Enshrined Hearts of Warriors and Illustrious People*, 1861.

**Heartburn**, the common name for a burning sensation in the chest, often accompanied by a feeling of discomfort in the throat and in the region of the heart. It is due to gastric disturbances, and is generally caused by irritation of the stomach wall by hyper-acidity of the gastric contents. The cardiac symptoms, when present, are generally due to an over-distended stomach interfering with the heart's action. The discomfort is rapidly relieved by a dose of bicarbonate of soda. The condition should be treated by ensuring a simple diet, regular exercise, and regular action of the bowels. Charcoal and bismuth are also very useful drugs for H.

**Hearth-money**, tax of two shillings imposed in 1662 on every hearth in all houses except cottages. The principle was an old one, for in early Eng. hist. an A.-S. king obtained part of his revenue from a *furnage*, a tax on the hearth smoke of all his subjects but the very poor. The tax of Charles II.'s reign was exceedingly unpopular, and was withdrawn in 1689, a window-tax being levied in its stead in 1695. The idea is also apparent in the hearth penny-tax paid annually to Rome as early as the tenth century.

**Heart of Midlothian**, old Tolbooth or gaol, pulled down in 1817, of Edinburgh, the cap. of Midlothian, which gives its name to one of Scott's novels.

**Heart's Content**, seaport and tn. of Newfoundland, situated on the Avalon Peninsula, 40 m. N.W. of St. John's, on the E. coast of Trinity Bay. It is the terminus of three Atlantic cables from Valentia in Ireland. Pop. about 1500.

**Heart's-ease**, see **PANTRY**.

**Hearts of Oak**, large friendly society founded in 1842, the objects of which are

to provide relief for members during sickness, and for members' wives during confinement, to insure the tools and implements of trade of members against loss or damage by fire, and to provide sums at the death of a member and for funeral expenses. The society also defrays the expenses of residence of members in convalescent homes and sanatoria. Special facilities for house purchase are afforded by the society to members and others. The membership is 423,000 and the funds, including reserves, amount to £17,665,000. The society's offices in Euston Road, London, were opened by King Edward VII. in 1907.

**Heat**, general term applied to that branch of physics that deals with the effects produced by heat on material bodies, with the laws governing the transference of heat from one body to another, with the physical nature of heat, and with the transformations of heat into other forms of energy. The term H. is used in ordinary language in a number of different senses, of which the following are the most common: (a) sensation of H.; (b) temp. of degree of hotness; (c) quantity of H.; (d) radiant H.

(a) The sense of H. is distinct from that of touch, for the former sensation is experienced if we sit in front of a fire, or in the sun, or in the neighbourhood of any hot body, and is, therefore, not dependent on actual contact with matter. It is from this sense of H. that we get our first ideas of H. as a physical entity which is capable of passing from one body to another.

(b) If a hot iron is placed on a cold iron plate, we may observe by a sense of H. that the plate is heated and the iron cooled until they both attain the same degree of warmth. From the sense of H. we derive the idea of a continuous scale or order, which we express as summer H., blood H., red H., etc., and we speak of the *temperature* of a body as denoting its place in the scale as distinct from the quantity of H. it contains.

(c) The quantity of H. in a body must depend on its size (and also, it should be added, on its material). The temp. on the other hand, does not depend on the size of the body, but on the quantity of H. per unit mass (other things being equal).

(d) It is well known that when the rays of the sun or of a fire fall on a body, they warm it, but it must not be supposed that H. has travelled across the intervening space from the sun or the fire to the body warmed. It is known that the energy of radiation is not the same thing as H., though it is converted into H. when the rays strike an absorbing substance.

The question at once presents itself, 'What is heat?' In this connection it will be well to follow briefly the development of the modern theory of H. It has long been known that H. can be developed by friction (e.g. between the wheels and axles of a carriage), or by percussion (e.g. by hammering a piece of iron on an anvil), or by compression (as in the case of a bicycle pump). This development of H. was accounted for by supposing that every

body in a normal state possessed a certain capacity for H. and contained a certain quantity of caloric at a definite temp. Percussion altered the condition of the substance and lessened its capacity for H. Some of the caloric was squeezed out of it, and, being thus set free, manifested its presence by the rise of temp. The weakness of this theory was shown by an experimental investigation carried out by Count Rumford in 1798. He mounted a gun-metal cylinder so that it could be rotated by h.p., while a blunt steel boring tool pressed against its bottom. The cylinder was covered with a layer of flannel to prevent loss of H., and its temp. was recorded by means of a thermometer placed in a hole drilled in the bottom. At the end of half an hour, when the cylinder had made 960 revolutions, the temp. had risen by 70° F. He found that the metallic dust rubbed off by the friction from the cylinder weighed only 837 grains troy (less than  $\frac{1}{1000}$  of the weight of the cylinder). 'Is it possible,' he said, 'that the very considerable quantity of H. produced in this experiment could have been furnished by so inconsiderable a quantity of metallic dust, and this merely in consequence of a change in its capacity for heat?'

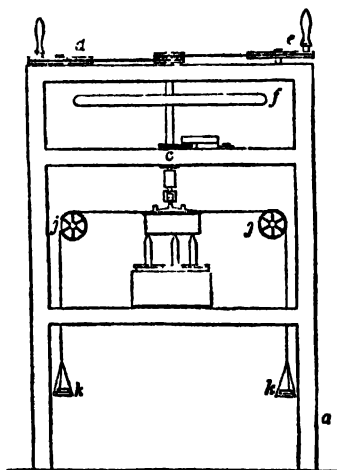


FIG. 1. JOULE'S APPARATUS

But Rumford went further, and showed that the capacity for H. of the dust was the same as that of the solid metal. The H. had clearly been produced by the friction, and was equivalent to the work done in rotating the cylinder under the conditions of the experiment. The accurate investigation of the relation between the work done in driving an apparatus and the H. developed was taken up by Dr. Joule of Manchester in the year 1840. The H. was produced by friction of a brass

paddle revolving in water contained in a specially constructed brass vessel, so that the water was heated by a kind of revolving churn process and the temp. was registered by a delicate mercurial thermometer. The paddles and the flywheel (Figs. 1 and 2) were driven by two wheels *d* and *e*. If everything were free the friction between the brass vessel and the water would carry the vessel round with the paddles and the water could not be churned, and therefore it would not be heated. The vessel was prevented from rotating by two forces applied by two strings fastened in a groove round the vessel and passing over the pulleys *j* and *j* and weighted at *k* and *k*. From the number of revolutions made by the paddles, the work done was calculated.

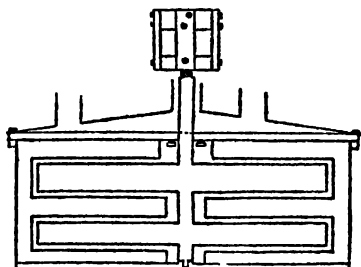


FIG. 2. BRASS VESSEL SHOWING PADDLES

After all corrections were made, Joule decided that the work done in raising a weight of 1 lb. through 772 ft. (at Manchester) will, if spent in friction (between brass and water), raise the temp. of 1 lb. of water 1° F. Joule showed quite clearly that the amount of H. produced depended on the amount of work done and on nothing else. He found the same result for friction of water in a brass vessel with a brass paddle, for friction of mercury contained in an iron vessel with an iron paddle, and for friction of two iron rings rubbing against each other in mercury. Joule also proved that H. is absorbed when a gas does work in expansion; and measured directly the amount of H. liberated by the compression of a gas. The principle which these experiments have established is that 'when H. is transformed into any other kind of energy, or *vice versa*, the quantity of H. which disappears is equivalent to the quantity of the other kind of energy produced, and *vice versa*.' But we have not given a satisfactory explanation of H. by saying that H. can be transformed into other forms of energy and *vice versa*.

The idea that H. is ultimately due to a motion of some sort has long been entertained. By friction and collision the sensible motion of bodies disappears and H. is generated. The supposition has been that the motion in such cases is not really lost, but is merely transferred from

the body as a whole to its individual particles. Thus, when a moving body is brought to rest by friction or collision, the energy of the original visible motion of the body is not annihilated, but passes over into the invisible molecules of the substances taking part in the friction or collision. This theory supposes that when a body is heated the rise in temp. is due to the increased energy of motion of the molecules of the body. But it goes further, and explains the transmission of radiant energy from one body to another, as from the sun to an individual on the earth. There is evidence in favour of the supposition that light is due to wave motion in the ether, and we have exactly the same evidence in favour of the same supposition with regard to radiant energy. Radiant energy (for example the radiant energy emitted by hot-water pipes or a blackened stove) and light behave in exactly the same way in a variety of experiments—in fact the only difference which can be detected is that light, as well as possessing all the characteristic qualities of the radiant energy, is also able to affect the sense of sight. Radiant energy then, like light, is supposed to be due to wave motion in the ether. We say that the molecules of a hot body are in a state of very rapid vibration, or are the centres of rapid periodic disturbances of some sort, that they thus excite waves in the ether, that these waves travel through the ether between a receiving body and the hot body with the velocity of light, and that when they fall upon the receiving body they are more or less absorbed by the molecules of the receiving body, causing similar motions in these molecules. The sense of H. is thus excited in a human being, or an animal, by the waves of radiant energy which start from a hot body just as the sense of sight is excited by the waves of light which start from a luminous body. The fact that light waves possess heating properties if they are absorbed by a suitable substance suggests at once that there is no essential difference between waves of light and waves of radiant energy. Extensive spectroscopic experiments have shown that the two sets of waves differ only in degree and not in kind. The ordinary spectroscope cannot be used, as glass absorbs the waves of radiant energy. Lenses and prisms made of rock salt are used in the instrument, and the radiations are received on the blackened bulb of a thermometer, or on the blackened part of an electrical instrument for recording temp. In this way the similarity between waves of radiant energy and waves of light has been established.

**CALORIMETRY.**—The scientific unit of H. is the *calorie*, which is defined as the quantity of H. required to raise the temp. of 1 gm. of water  $1^{\circ}$  C. Other units of H. are the Brit. Thermal Unit, which is defined as the amount of H. required to raise the temp. of 1 lb. of water  $1^{\circ}$  F., and the Thermo, which is equal to 100,000 B.Th.U. In order to measure a quantity of H., the simplest way is to measure the rise of temp. produced in a known mass of water contained in a suitable vessel or

calorimeter. Calorimetry is discussed fully in text-books on H.

**EFFECTS OF HEAT.**—These may be summarised briefly as follows: (1) change of dimensions or of vol.; (2) change of internal stress; (3) change of state; (4) change of temp.; (5) electrical and chemical effects. Each of these will be considered in turn:

(1) *Change of dimensions.*—Most bodies expand or increase in vol. on being heated. In laying down the rails of a railway, an interval is left between consecutive rails to allow for this. The expansion due to rise of temp. must be taken into account in building steel bridges and in setting up pipes which are to carry hot water. The

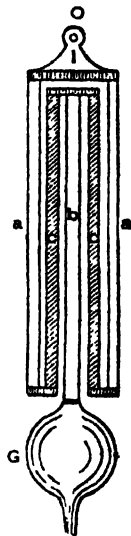


FIG. 3

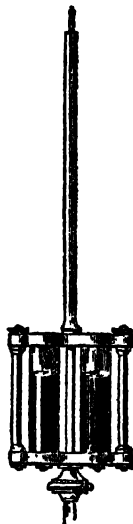


FIG. 4

COMPENSATING PENDULUM

pendulums of clocks and the balance wheels of watches have to be 'compensated,' so that the time of swing shall not be altered by changes of temp. In Fig. 3 a compensated pendulum is shown; the bob G is supported by the rods, *a*, *a*, *b* of one material and the rods *c*, *c* of another material. The lengths of the rods are so adjusted that, whatever the temp., the centre of gravity of the pendulum is always at the same distance below the point of support O.

In Fig. 4 the downward expansion of the rod is compensated by the upward expansion of the mercury. In Fig. 5 the rim of the wheel is made up of three segments, each of which consists of two metals securely fastened together, the more expansible being on the outside. When the temp. rises, the spokes increase

in length, but this is compensated by the bending inwards of each of the segments of the rim. An alloy known as *invar*, which consists of 64 per cent of steel and 36 per cent of nickel, has an extremely small coefficient of expansion, and it is often used in pendulum clocks, since no compensating device is required when the rod and bob are made of it.

The coefficient of expansion of liquids is, as a rule, much greater than that of solids, while the coefficient of expansion of gases at constant pressure is very much greater than that of solids or liquids; further, it is independent of the nature of the gas, *i.e.* oxygen expands to the same extent as an equal vol. of hydrogen, air, or any other gas for a given rise of temp. under the same conditions of pressure.

(2) *Change of internal stress.*—Many of these changes in vol. are accompanied by changes in the internal forces or stresses between the molecules of the body. As a wheel tyre contracts it is subject to enormous internal stresses. If air or any

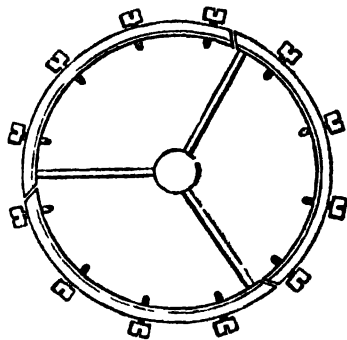


FIG. 5. BALANCE WHEEL OF WATCH

other gas is confined in a closed vessel and its temp. is raised, the pressure exerted by the gas is increased and may burst the vessel. The tyres of a motor-car are often caused to burst in this way in summer.

(3) *Change of state.*—There are three states of matter, *viz.* solid, liquid and gaseous states, and, as Black discovered in 1756, the change from one state to another is accompanied by the evolution or absorption of H. Because a thermometer shows no change of temp. while a change of state is taking place, Black referred to this H. as *Latent Heat*. For example, 80 calories of H. are required to change 1 gm. of ice into 1 gm. of water at 0° C.

(4) *Change of temperature.*—If a quantity of water be heated, we can tell by our sense of H. that it is becoming hotter; and in scientific language we say that its temp. is rising. The change of temp. can be measured by means of a thermometer (*q.v.*).

(5) *Chemical and electrical effects.*—Chem. changes commonly accompany the heating of a body. Thus when coal is heated in air, it combines with the oxygen of the air and burns; this process, once started, produces sufficient H. for its continuance. The electrical effects of H. are of two kinds: (a) That produced when a circuit is made up of wires of different materials, say copper and iron joined together at each end, and the temp. of the two junctions is different; then a small electric current flows round the circuit. This effect is known as the thermo-electric effect (see **ELECTRICITY—Thermo-electricity**), and was discovered by Seebeck in 1821. Since a very small electric current can be measured easily, this effect of H. is used in many temp. measuring instruments. (b) The change produced in the electrical resistance of bodies by H. This has been made the basis of a method of measuring high temps. by means of the platinum-resistance thermometer (*q.v.*).

*Modes of transference of Heat.*—There are three modes of transference of H.: (1) Convection, (2) Conduction, and (3) Radiation. (1) In convection H. is carried or conveyed by the motion of heated masses of matter. The most familiar instances of this method of transference of H. are the heating of buildings by the circulation of hot water (see **HEATING and VENTILATION**), or the equalisation of temp. that is produced by the movement of the hot water in a mass of water heated from below (as in the case of a kettle). Convection can only take place in fluids, and the process constituting convection takes place as follows. The fluid is heated and expands so that it becomes less dense than the colder surrounding fluid. It is therefore pushed upward by the denser fluid, and it takes its H. with it. Convection plays an all-important part in ventilation.

(2) In conduction, H. is transferred without visible relative motion of the parts of the body. Familiar examples of this are the transference of H. from one end of a poker placed in a fire to the other end, and the transference of H. from one end of a silver spoon, placed in hot tea or coffee, to the other end. Conduction always takes place from the hotter to the colder parts of a conductor. All metals are good conductors of heat, while most non-metallic substances, liquids (excluding mercury) and gases are poor conductors of H.

(3) Radiant H. has been shown to consist of light of longer wave-lengths than those that affect our sense of vision. There is no other essential distinction between 'ordinary' light and radiant H. Both travel with the same velocity of 186,000 m. per sec. *in vacuo*, and we receive all our H. from the sun by means of radiation that travels across empty space incapable of conducting or conveying H. to us by the other modes referred to above.

In most cases H. is transferred by all three methods simultaneously. It is interesting to notice that the thermos

flask (q.v.) designed by Dewar attempts to prevent the transference of H. to or from the enclosed liquid. It consists of a double-walled vessel of glass (a bad conductor of H.), whose inner faces are silvered to reflect radiant H., and the space between the walls is evacuated to prevent transference of H. by conduction or convection.

The chief sources of H. are: (1) the sun; (2) chem. action, as in the burning of coal, wood, etc.; (3) mechanical act, e.g. friction; (4) electrical energy, e.g. heaters and lamps; (5) change of state, e.g. from solid to liquid. It is interesting to note that the ultimate source of all H. in the above cases is the sun.

**Bibliography.**—T. Preston, *Theory of Heat*, 1894; J. K. Roberts, *Heat and Thermodynamics*, 1928; E. J. Holmyard and F. Barraclough, *Heat, Light, and Sound for Beginners*, 1931; A. E. McKenzie, *Heat*, 1936; and R. G. Nitton, *Heat, Light, and Sound*, 1936.

**Heaters, Electric**, see under **ELECTRIC LIGHTING**.

**Heath, William (1737-1814)**, b. at Roxbury, Massachusetts, U.S.A., started life as a farmer. In 1765 he joined the Ancient and Honourable Artillery Company, and five years later became its commander. In 1774 he became Brig.-Gen. in the prov. army, and took part in the fighting with the Brit. troops at Concord, Mass., in April 1775. In 1776 he became Maj.-Gen. He was defeated in his attempt to take Fort Independence from the Brit. When Benedict Arnold sought to betray his countrymen and then fled to the Brit. lines, H. took charge of the troops at West Point, New York. When Gen. Washington went S. to fight the troops under Lord Cornwallis, he placed the sturdy H. in charge of the soldiers on the Hudson R., which faced Gen. Clinton. After the Amer. colonies had won their independence, H. retired to his farm. However, he took some part in Massachusetts state politics, being a State Senator in 1791. He d. at Roxbury, Jan. 24.

**Heath**, see **ERICA**.

**Heather**, see **CALLUNA VULGARIS**.

**Heathcock**, see **BLACKCOCK**.

**Heathfield, George Augustus Elliott, Baron (1717-90)**, Brit. gen., a younger son of Sir Gilbert Elliott, b. at Stobbs, Roxburghshire. After having been educated at Leyden Univ. and at Woolwich, he fought with the Prussian army in 1735-36, and as a grenadier guard in the war of Austrian Succession at Dettingen and Fontenoy. In 1776, at the outbreak of the Amer. War, he was sent out as governor to Gibraltar. His heroic defence of that fortress against Spain, from June 1779 to Feb. 1783, is one of the finest achievements in Brit. hist. On his return to England in 1787 he was created Baron H. of Gibraltar.

**Heating.** The temp. of a human being in good health is 98.4° F. When the external temp. rises, that of the body is regulated by perspiration while a low external temp. may be counteracted by increased bodily exercise. In civilised

life, however, man requires some form of H. apparatus in addition to clothes and houses. In devising such apparatus the engineer's terms of reference include the considerations of economy and efficiency, ventilation and atmospheric humidity. For detailed arrangements concerning ventilation the article on that subject must be consulted.

In the first place, consideration must be made of the fact that heat is lost from a building by conduction through the walls and especially through windows, and by the leakage of warm air and the consequent entrance of cold air for purposes of ventilation. It is the architect's business to make a study of the losses of heat in this way when designing large buildings before computing the necessary supply of heat.

All systems of H. depend either upon convection or radiation (see **HEAT**) or upon a combination of both. The most common and obvious method of H. is, of course, by radiation, and is exemplified by the open fire. By this means the walls and furniture and occupants of a room are heated and the air left cool. Heat is radiated not only from the fire itself but from the back of the grate and from the sides. The effective radiating surface of an open fire is increased by making the sides of a grate inclined at an angle of at least 120° to the back, and the back is made to hang forward over the fire. Further the grate should be bounded on both sides by firebrick and the overhanging part should be made of the same material. The advantages of this method of H. are (i.) good ventilation, because of the draught up the chimney, (ii.) air in the room is left cool, (iii.) psychological effect of the open fire. The latter is a big inducement to retain this method of H. in spite of the fact that nearly 80 per cent of the heat from the coal is lost to the room.

The latter consideration was responsible for the gen. adoption of stoves in colder countries. While the stove is much more efficient than the fire-grate it is apt to give off noxious fumes into the room and to produce a 'dry heat' that is unhealthy as it affects the throat and the chest. Bad odours are also prevalent with stoves owing to the burning of the dust in the air as it comes in contact with the hot metal. Gas stoves, which usually consist of asbestos, or some similar substance, heated by a row of Bunsen burners (q.v.), are popular where fires are only used occasionally. They act, of course, as open fires, but should always be fitted to an efficient flue to carry off the products of combustion.

**Central Heating.**—In large buildings considerations of economy and labour require some system of central H. This system is often adopted in larger houses and, generally speaking, a hot-water system is used in this country. The water is heated in the basement and circulates by means of convection through pipes and radiators distributed throughout the building. The water rises through large pipes to an open tank at the top of



the system which allows for the expansion of the water and by means of which the pipes and boiler are kept full. The cooled water returns via a vertical pipe to the boiler where it is heated again. Air cocks are placed at the tops of the radiators so that any accumulated air which impedes circulation may escape.

There is also a single-pipe system of central H. in which the hot water is taken from a single main pipe to each radiator and the return is made to a point farther along the pipe. In this system radiators far removed from the main pipe are supplied with cooler water than those nearer to it and for this reason distant radiators are made larger. The temp. of the water leaving the boiler in most systems is about 180° F. In large buildings the circulation of the water by convection is too sluggish and is further opposed by friction between the water and the pipes. In this event a pump is installed to force the water round the system.

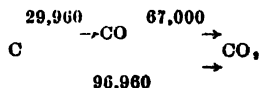
Ventilation must be attended to very carefully wherever central H. is adopted, for the radiators heat the air in the room and the heat is thus distributed by convection currents of air as well as by radiation (to a small extent). The air is not naturally renewed, however, and in large buildings systems of ventilation are often installed. In small rooms the disadvantage can be remedied by placing the radiators beneath open windows. The hot air rising from the radiator then carries along with it a supply of fresh air as it rushes past the window and conveniently warms up the cold air before it is distributed in the room. The hot-water system is not suitable for tall buildings and a steam-H. system is necessary in such cases. The most widely used (especially in America) system of the latter class is the *Vacuum system*. Steam is generated in a boiler and passes thence by means of a steam supply pipe to radiators installed in the various rooms. The steam passes in at the top of the radiator via an inlet valve and condensing in the radiator it gives up its latent heat to it. Air and condensed steam pass through a thermostatic trap (designed to prevent the passage of steam) into a return pipe, where it is drawn back to the boiler by means of a so-called vacuum pump. In this way rapid circulation is maintained. Central H. systems have naturally been developed extensively in America and the steam heating systems there are frequently arranged with one central boiler supplying a whole dist. In Iceland geyser water is piped to Reykjavik.

**Electrical Heating.**—The disadvantage of this form of heating is its cost. The ultimate source of the electrical energy is the combustion of coal in steam engines. The efficiency of such engines (i.e. percentage ratio of energy developed to energy supplied) is itself low, and additional loss takes place in the conversion of the mechanical energy of the engine into electrical energy in the dynamo. Still further energy is lost in the cables, in the form of heat, in transmitting the electrical energy, and of course the cost of

transmission has to be added. If the electrical energy is generated by water power, however, it is sufficiently economical to make its conveniences attractive. At present there are no immediate prospects of such cheap generation of electrical energy being generally adopted in Britain, though the proposed Severn dam would provide a large supply of hydro-electric power (q.v.).

For H. by hot air, see VENTILATION, since this concerns the heating of air before it is brought into a room. See also under BOILERS, ELECTRIC LIGHTING, FURNACES, FUELS, and GAS WATER HEATERS. See H. G. Solomon, *Domestic Electric Heating*, 1927; A. A. Jones (ed.) *Modern Heating and Ventilation*, 1935; E. C. Stanford, *Central Heating and Hot Water Supply for Private Houses*, 1938; L. J. Overton, *Domestic Hot Water Supplies and Central Heating by Hot Water*, 1939 and *Central Heating*, 1949.

**Heat of Formation.** Whenever a chemical reaction takes place, heat is either evolved (exothermic reaction) or absorbed (endothermic reaction) in the process. In the case of combustion, the quantity of heat evolved is large, in other cases smaller, and in some negative. The H. of F. of a compound is the amount of heat, measured in calories, which is evolved when the molecular weight in grams of the compound is formed from its elements. Thus, when 2 grams of hydrogen combine with 16 grams of oxygen to form 18 grams of water, 69,000 calories are evolved, which amount is said to be the H. of F. of water. The quantity is determined by carrying out the reaction in a calorimeter surrounded by water, the product of the mass of water and its rise in temp. giving the quantity of heat liberated. In cases where the H. of F. cannot be determined directly use is made of the fact, summed up in the law of Hess, that the quantity of heat evolved or absorbed in the formation of a compound is quite independent of its mode of formation. Thus the H. of F. of carbon monoxide may be arrived at from the following considerations: (1) On forming a gram molecular weight of carbon dioxide from carbon monoxide and oxygen, 67,000 calories are evolved. (2) On forming the same weight of carbon dioxide from its elements, 96,960 calories are evolved. Therefore, on forming one gram molecular weight of carbon monoxide from its elements, 96,960 minus 67,000, or 29,960 calories are evolved. This may be represented as follows:



Certain compounds, such as acetylene, hydrogen iodide, and nitric oxide are 'endothermic,' i.e. have heat 'stored up' in them, which is liberated on their decomposition into their respective elements.

**Heat of Neutralization** is the heat change taking place when gram equivalents of acids and bases neutralize one another in very dilute solutions. **Heat of solution** is

the heat change taking place when the gram molecular weight of a substance is dissolved in a very large quantity of water, usually represented as  $Aq$ .

**Heaton Norris**, tn. of Lancashire, England, situated on the Mersey, 4 m. S.E. of Manchester, and forming a suburb of Stockport; it is connected with the latter by a bridge and viaduct. It is a busy industrial tn., with cotton and thread mills. The Ashton, Manchester, and Oldham Canal ends here. Pop. 12,000.

**Heat-stroke**, see **SUNSTROKE**.

**Heaven**, in the popular use of the term, that part of sidereal space which we can ourselves see. This use was very common among the Jews, and in the O.T. the term denotes sometimes the region of the clouds, and sometimes the superior region of the stars. In the medieval scholastic philosophy (vide *Summa Theologiae* of St. Thomas Aquinas) these two are grouped together as the 'firmament,' but it has been suggested that the Jews spoke of them as the first and second Hs., while the abode of God and the Saints, that is to say, H. in the theological sense, was spoken of as the third H. With this is connected St. Paul's reference to the 'third H.' in 2 Cor. xii. 2. Other classifications of the Hs. are found in Jewish and Lat. theology, the most important being that of the Cabbala, representing the later Rabbinic conceptions. Here we find a sevenfold subdivision of the heavenly regions, of which the highest is the abode of God, the lowest, the region of the stars. This classification has passed into the Mohammedan theology, together with much of the Rabbinic angelology. As the abode of God, H. must be considered as some region of space in which God makes a special manifestation of Himself, and this conception is found running through the whole of the Biblical narratives and Patristic writings. Lastly, H. is often spoken of as a state, the condition of those souls who share the life of Christ. Thus, in Ephes. ii, 6 and in Phil. iii, 20 this conception, that even now the life and conversation of Christians are 'in H.' and 'in heavenly places,' is clearly present.

**Heaves, or Broken Wind**, see **under HORSE (DISEASES)**.

**Heaviside, Oliver (1850-1925)**, Eng. scientist who carried out much important work on practical electrical research and on the more theoretical aspects of the subject; b. in London. For a few years, ending 1874, he was employed by the Great Northern Telegraph Co. but he retired because of deafness. Afterwards lived in Devonshire, studying electromagnetic radiation in its application to telegraphy and telephony. He made fundamental discoveries on telephonic transmission, but is most commonly remembered for his suggestion that an upper layer of the air (the 'Heaviside layer') has conducting powers that serve to confine wireless and other electromagnetic waves to the neighbourhood of the surface of the earth. F.R.S., 1891. Pub. *Electro-Magnetic Theory* (1893-1922). **Heavitree**, E. suburb of Exeter, Devonshire, England, included in the Exeter

parl. bor. In the par. church is a marble monument to members of the Raleigh family, and sev. armorial shields. Pop. 12,000.

**Heavy spar**, see **BARYTES**.

**Heavy Water**, water in which the hydrogen is replaced by deuterium, the heavy isotope of hydrogen with an atomic weight of 2. Formula  $D_2O$ . It is contained in ordinary water to the extent of about 1 part in 5000 and may be obtained by the fractional electrolysis of water,  $D_2O$  being electrolysed more slowly than  $H_2O$ . In atomic science  $D_2O$  is used to slow down fast-moving neutrons.

**Hebbel, Christian Friedrich (1813-63)**, Ger. poet and dramatist, b. in humble circumstances at Wesselburen in Dithmarschen, Schleswig-Holstein. After travelling on the Continent, he settled in Vienna (1846), where he d. His first tragedy, *Judith*, was performed at Hamburg in 1841, and made his reputation. His tragedies are very powerful, and show a fine sense of dramatic situation; but they depict for the most part the passionate struggles of hot and ugly natures, and his scenes are unrelieved by humour or by loveliness. His chief works are: *Maria Magdalena* (1844), *Julia* (1851), *Gyges und sein Ring* (1856), and *Die Nibelungen* (1862). His lyric poems are included in *Gedichte* (1841-48), and *Mutter und Kind* (1859). R. M. Werner's critical ed. of his works, 1901-03, and studies by E. A. Georgy, 1904, 1922; P. Bornstein, 1924; and K. Ziegler, 1938.

**Hebburn**, tn. of Durham, England, situated on the S. bank of the Tyne, in the Jarrow div., 4 m. N.E. of Gateshead. There are chem. and engineering works, coal mines, and lead smelting works. Shipbuilding is also carried on. Pop. 24,000.

**Hebden Bridge**, tn. of the W. Riding of Yorkshire, England, on the R. Calder, in the Sowerby parl. div., 8 m. W. by N. of Halifax by rail. The tn. has cotton factories, dye-works, and foundries. Pop. 7000.

**Hebdomadal Council**, The governing body of the univ. of Oxford. It was evolved, in 1854, out of the Hebdomadal Board, instituted in 1631 by Charles I., probably at the suggestion of Archbishop Laud. It consists of the chancellor, vice-chancellor, late vice-chancellor, two proctors, *ex officio*, and six heads of houses, six profs. and six members of convocation, elected by congregation. The council holds its meetings weekly during term.

**Hebe**, Gk. divinity, goddess of youth, daughter of Zeus and Hera, and cup-bearer of the gods before the coming of Ganymede. She was the wife of the deified Heracles, with whom she was worshipped at Athens. In Rome she was worshipped as Juventas in a temple on the Capitoline Hill. She had the power of restoring the aged to youth. The most famous statue of H. is the masterpiece of Canova.

**Hebel, Johann Peter (1760-1826)**, Ger. poet, b. at Basle. He studied theology at Erlangen (1778-80), subsequently teaching at the Gymnasium at Karlsruhe. He wrote his poems in 'Alemannic' dialect;

his *Allemannische Gedichte* was trans. by Reinick into High Ger. in 1891. His work was fresh, humorous, and full of vigour, and attained great popularity. The *Schicksalsstein des rheinischen Hausfreundes* (1811), contains first-rate stories. The first complete ed. of his works was pub. in 1832-34 and further eds. by W. Zentner (1929) and W. Altwegg (1949). See lives by Schullheiss, 1831; G. Langin, 1894; W. Altwegg, 1935; and S. Löffler, 1944.

Heber, Reginald (1783-1826), Eng. bishop, b. at Malpas, Cheshire. After graduating at Brasenose College, Oxford, and touring in Europe, entered holy orders (1807), and accepted a living at Hodnet, Shropshire. He was appointed Rampton lecturer, 1815; preacher of Lincoln's Inn, 1822; and bishop of Calcutta, 1823. He is chiefly remembered by the hymns he wrote, the best known being 'From Greenland's Icy Mountains,' 'The Son of God goes forth to War,' and 'Brightest and best of the Sons of the Morning.' Besides his *Hymns* (new ed. 1878), his publs. include: *A Journey through India* (1828), and *Palestine: a Poem* (1809). See lives by his widow, 1838, and G. Smith, 1895.

Hébert, Jacques René (1757-94), Fr. revolutionist called 'Père Duchesne', b. at Alençon, and went to Paris as a servant. At the outbreak of the Revolution he became an extreme Jacobin, propagating his views in *Le Père Duchesne* (which he ed., 1790-94), and in various pamphlets, such as *La Lanterne magique* (1790). He joined the Club of the Cordeliers (1791), became a member of the Commune (1792). He took part in the Sept. massacres and sat on the commission which judged Marie Antoinette. He inaugurated a 'Worship of Reason', the followers of which were called Hébertists or *Enragés*, but was arrested by his rival Robespierre, and guillotined on March 21. See studies by C. Brunet, 1857; and Mater, 1888; and F. V. Aulard, *Le Culte de la raison*, 1892.

Hebrew Language, Writing and Literature. Language, in which almost the whole of the O.T. (see BIBLE) was written, is a branch of the great Semitic family, so called (since 1781) from the name of Shem, the first-born of the three sons of Noah (*Gen. x.*). The Hebs. or Israelites and the Aramaeans are considered as belonging to the so-called 'Third Semitic immigration', which during the second millennium B.C. occupied Palestine, Syria and N. Mesopotamia. The Semitic languages lend themselves to the following div.: (1) The N.W. group, consisting of two main branches, Canaanite (including Heb., Phœnician, Moabite) and Aramaic (including Syriac); (2) the E. group (including Accadian, Assyrian and Babylonian); and (3) the S. group (including Arabic and Ethiopic). All these languages possess certain features in common, obscured, however, to some extent by the particular developments of each. The chief of these Semitic peculiarities are: (1) Stems mainly based on three consonants; therefore (2) the scripts generally consisted of consonants only, the cuneiform writing (q.v.) forming

an exception; (3) verbs having two tenses only, and nouns only two genders; (4) identity of roots for verbs and nouns of kindred meaning and general inability to form compound words; (5) direction of writing (except in cuneiform, q.v.), generally from right to left.

The origin of the word 'Hebrew' or 'Ibri, in Heb., is uncertain; the traditional explanation as 'of the other side' is generally rejected. The Heb. language is called in the Bible 'the language of Canaan' (*Is. xix.*, 18) or 'the Jews' language' (*Is. xxxvi.*, 11 and 13). Until twenty-five years ago there were but few monuments and other written documents in Heb. outside the O.T. Nowadays, we can list some hundreds of Early Heb. inscriptions belonging roughly to the first half of the first millennium B.C. The earliest is a small stone tablet, known as the Calendar of Gezer, with a summary list of farming operations arranged by months. It can be assigned to c. 1000 B.C. The important Moabite stele of King Mesha, belonging to the middle of the ninth century B.C., is written in a dialect almost identical with Heb. About 80 ostraca, or inscribed potsherds, found at Samaria, belong to the ninth or eighth century B.C. They are invoices of oil and wine, and are written in a beautiful cursive type, and provide us with examples of the dialect and cursive script of the N. Kingdom of Israel. The most important epigraphic monument from Judaea is the Siloam inscription, assigned to c. 700 B.C. The Early Heb. cursive writing reaches its peak in the now famous collection of twenty-one letters and other documents from Lachish (in S. Palestine), written in ink in a bold script in perfect Biblical Heb. A considerable number, about a 150, of inscribed stone seals have also been discovered in Palestine, and they attest the diffusion of writing among the Hebs. in the pre-exilic period (first half of the first millennium B.C.). Stamps impressed on jar-handles, inscribed weights and measures, marks on pottery and masonry, and other miscellaneous documents, all have a certain value from the palaeographical as well from the linguistic and historical point of view. All these inscriptions are written in the Early Heb. alphabet, which, together with the Phœnician, belongs to the Canaanite branch of alphabets (see ALPHABET). Both the writing on Jewish coins from the Maccabean age to Bar Kochba's revolt (140 B.C. to A.D. 132-135), and the beautiful, neat, and symmetrical Samaritan alphabet, still in use for liturgical purposes, are direct derivatives of the Early Heb. script. On the other hand, the modern Heb. alphabet (see Fig. on p. 266 of Vol. I.), in all its monumental, book-hand, and cursive forms, is not a descendant of the Early Heb. alphabet, but of the 'Square Hebrew' alphabet, which was a derivative of the Aramaic alphabet and can be traced from the second and first centuries B.C.

The period of literary Heb. covers at least eight centuries, from about 1000 B.C. to the second century B.C., but its most flourishing period lasted from the

eighth to the sixth centuries B.C. After the return from the Exile, Heb. was gradually supplanted by Aramaic, but it is erroneous to think, as some scholars do, that it died out. Actually, it continued to be employed in 'national' circles. However, considerable portions of the biblical books of Daniel and Ezra are written in Aramaic. We see even from 2 Kings xviii., 26, that by the time of Hezekiah (c. 700 B.C.), Aramaic was the 'diplomatic' language between Assyria and Judah, and slightly later it became the language of trade and diplomacy throughout W. Asia as is shown by the numerous inscriptions and by other evidence. Heb. was still retained as the written language, but even here—as we can see from the later books of the O.T.—it is largely intermixed with Aramaic forms and coloured by Aramaic idioms. Heb. continued to be the language of religious literature and poetry, and scholars made continuous efforts to keep up its high standard. A new form of Heb. was developed. It is known as *Mishnaic* Heb. It was partly artificial, containing a certain number of borrowings from the Aramaic, Gk., and Lat. languages, and, at a later stage, from Persian and Arabic, and was so called because the chief literary monument of this period (second to third centuries A.D.) is the *Mishnah* (from Heb. *shanah*, 'to learn by heart, to repeat'), which is a kind of code, containing nearly four thousand rules. To this code, later on, was added the *Gemarah* (from *gamar*, 'to supplement,' 'to complete' or also 'to learn'), which is a sort of complement of and commentary on the *Mishnah*, and includes the store of *Halakah* ('homily'). The *Gemarah* is written in Aramaic; *Mishnah* and *Gemarah* together form the Talmud (i.e. what is 'learned,' or 'taught,' from Heb. *lamad*, 'to learn'). There are two Talmuds in existence, the Babylonian Talmud (written in Aramaic) and the Jerusalem Talmud (written in Palestinian Aramaic). While both have the same *Mishnah*, they differ considerably in their *Gemarah*. The Babylonian one is the more perfect and authoritative, and it is also much more copious (about four times as large) than the Jerusalem *Gemarah*. The Talmudic literature was intended principally for the learned. It grew from the discussions in the academies and schools; and thus there arose also a system of biblical expositions, and popular lectures and sermons. These discourses were given in the synagogues, and formed the basis of the Midrashic literature, the *Midrash*, from Heb. *darash*, 'to expound.' (Quotations from prior Midrashic works, especially those whose contents are *Halutic* ('legal') are in Heb.) The word *Midrash* also meant 'doctrine' or 'study,' and was sometimes used synonymously with Talmud or *Gemarah*. The Talmudic literature is a very valuable body of laws and decisions, a monument of Jewish learning, acumen and wisdom, and it has moulded the Jewish people, promoting their intellectual activity, regulating their conduct, influencing their

opinions, stimulating their spiritual and religious life. The Jerusalem Talmud seems to have been completed in the fourth century A.D., the Babylonian Talmud in the fifth century A.D. Generally, it may be said that the Talmud was the result of the discussions in the academies and of the deliberations of Rabbis, extending over a period of some six or seven centuries. It is not a book, but a literature. It is not the work of one or of several authors, but the result of the labour of generations. The nature of the language is concise and compressed. Rabbinic Judaism is the Judaism of the Talmud. To modern ideas many of the Talmudic sections may seem obsolete, but it must be borne in mind that in so vast a literature—dealing with philosophy, astronomy, mathematics, law, medicine, anatomy, etc.—we are bound to come across much that is useless. However, its main idea being 'to make a fence round the law,' it succeeded in preserving Judaism for many centuries to come. The study of the Talmud spread rapidly through all countries of the diaspora, from Babylonia through N. Africa and Italy to Spain, France and Germany.

Another important branch of Heb. literature is the *Piyyutim*, or 'liturgical poems.' Some of these survived in the Jewish prayer-books, but a great part seems to have been lost for ever. Many fragments of Piyyut literature were discovered in the famous Genizah of Cairo. This enormous collection derives its name from the Heb. *ganaz*, 'to hide, store up.' The Jews were accustomed to put away all sorts of material written or printed in Heb. lest anything on which the name of God might be inscribed should be desecrated by profane use. Some of these fragments have already been pub. in I. Davidson's *Thesaurus of Medieval Hebrew Poetry*, 1821-29, others have still to be studied, and recently a Research Institute for Hebrew Poetry has been founded at the Heb. Univ. of Jerusalem, with the task of reconstructing this lost branch of Heb. literature. The authors of these poems belong to different periods and localities. Of some nothing but their names are known. Others are more or less known; the earliest of them seem to have lived in the sixth to eighth centuries A.D., but the majority belong to the ninth to eleventh centuries. These beautiful poems written mainly in Heb., reflect many aspects of the religious and cultural life of Oriental Jewry during the millennium following the destruction of the Temple. Some of these poems were composed by the celebrated Gaon Saadya (b. 822). Other important literary work was produced under the Gaonate (see GAON).

The Heb. alphabet, as already mentioned, was purely consonantal, but the absence of vowel-letters was not strongly felt, because, it must be emphasised, the Semitic stems are essentially consonantal. However, as Heb. speech passed out of daily use, it became necessary to introduce some form of vocal distinction in order to read and explain the Holy Scriptures correctly. Originally, four of the

consonants (the glottal *aleph* and *hē*, and the semi-vowels *vāw* and *yōd*) were also employed to represent long vowels, but gradually they began to lose their weak consonantal value, and became a kind of vocal consonants, known as *matres lectionis*. Not only were they used as long vowels, but (for instance in the recently discovered Heb. MSS. which are partly assigned to the second century B.C.) they were used with such abundance and with so many combinations of two letters, such as *jōd-aleph*, *vāw-aleph*, etc., that the change in spelling or addition of letters became forbidden. 'The omission or the addition of one letter might mean the destruction of the whole world' says the Talmud. It became, therefore, necessary to introduce a complementary system (not to be employed in the synagogue rolls) of vocalisation by punctuation marks, called *niqud*. Three such vocalisation systems are known, the 'Babylonian', which was superlinear, the 'Palestinian', also superlinear, and 'Tiberiadic', partly superlinear, but mainly sublinear.

If Rabbinic Judaism was mainly creative, medieval Judaism was mainly preservative. Medieval Judaism too possessed creative minds, philosophers, codifiers, teachers, commentators, polemic writers, great poets, but their common starting-point was, generally speaking, the Talmud. In Cairo there was a galaxy of Jewish intellect, while in Spain Jewish culture was to reach a height it had never previously attained. Jehuda Halevi (1080-1140), a Heb. poet of the most fervid depth of heart, 'poured forth his passionate longing for Palestine in words of matchless sublimity' (E. Levine), but the most important contribution to Judaism came from Moses Maimonides (1135-1205), the greatest intellect in Jewry in the Middle Ages. He is regarded as a 'second Moses'. Maimonides wrote in Heb. and Arabic. Also the writings of the great medieval Franco-Jewish Biblical commentators Solomon ben Isaac of Troyes, known as Rashi, and David Kimchi of Narbonne were of the highest importance. Rashi (1040-1105) wrote a commentary on the entire Talmud, and another on the Bible. Kimchi's commentary was used in a large degree by successive generations of Christian exegetes, particularly in the preparation of the King's 'Authorised Version' of 1611. Other great commentators were Gershon (late tenth and early eleventh century), Abraham ibn Ezra, Moses ibn Ezra, Shmuel ibn Eliyahu, Jacob Tam, the founder of the school of Tosafists who flourished in France and Germany for over two hundred years, Meir of Rothenburg, and Joseph Caro, who in the sixteenth century composed the *Shulchan Aruch*, a collection of former Jewish codes, which remained the standard guide in Jewish life.

Despite the various inquisitions and censurings of the Christian Church and her attempts during the Middle Ages to eradicate Heb. literature altogether, the Heb. language survived. In Paris, in June 1242, twenty-four cartloads of Heb.

MSS. were publicly burnt, and similar destructions occurred at various times in various places, but Heb. remained up to the nineteenth century the language of the synagogues, of the Jewish prayers, and of the Jewish religious schools, and was also the *lingua franca* of Jewish scholars of all ages and all countries.

*The rebirth of the Hebrew tongue through Zionism.*—One striking result of the development of Zionism (*q.v.*) is the rebirth of Heb. as a living language; for both ideal and practical considerations have combined to associate the return of the Jews to Palestine with the return to Heb. The ideal is the estab. of the Heb. nation, speaking the Heb. tongue, on the soil of the anc. Hebs. The cultural renaissance involved in the foundation of the Jewish State of Israel in Palestine is necessarily based on Heb., language of the national past of the Jewish people and of their great original contributions to civilization. But, also, a common language was a practical necessity for a polyglot community of Jewish immigrants into Palestine from all parts of Europe and the Near E., and no language excepting Heb. had any claim to gen. acceptance. While this rebirth of Heb. is the fundamental achievement of Zionism in the cultural sphere, Heb. had ceased to be exclusively a religious language, even in the wide connotation of the term 'religious' as applied to Judaism, a century before the birth of Zionism as an organised movement. From the latter half of the eighteenth century onwards, a secular Heb. literature had developed amongst the Jews of E. and central Europe (its bp. being Italy), though it was a purely literary movement and its language not one in which people habitually spoke or thought. It was, in fact, only with the emergence of the national idea in the eighties of last century and the estab. of Jewish settlements in Palestine that Heb. began once again to be a spoken language and the possibility created of a Heb. literature firmly rooted in the life of the people. To-day the supremacy of Heb. in the life of the Jews in Palestine is assured. The pioneer work of the early Heb. teachers has borne fruit in a network of Heb. schools, elementary, secondary, and technical, with some 100,000 pupils, and the educational structure is crowned by the Heb. Univ. on Mount Scopus in Jerusalem. Heb. as it is spoken and written in Palestine to-day is substantially the language of the Heb. Bible and the other anc. and medieval literature of the Jewish people, though naturally much adaptation and development has been necessary to fit it for its new function under the conditions of to-day; but since the early days of Jewish resettlement in Palestine, men of scholarship have sought, to keep the development of the language on the right lines (Leon Simon). Heb., indeed, which had been handed down for centuries as the language of prayer and literature, was, however, not a dead tongue before the appearance of the Zionist movement. It has always been the *lingua franca* of

Jewish scholars all over the world, the language of correspondence between Jews living in various countries. During the Dark and Middle Ages the Jewish communities in the Muslim realm cultivated equally Heb. and Arabic. Their great writers from Spain, Gabirol, Halevi, Ibn-Ezra and Maimonides, wrote their poems and their homilies in Heb., their science and philosophy in Arabic. Furthermore, the revival of the study of Heb. by Christians, which was learnt from Jews, was an integral part of the Reformation and Renaissance in W. Christendom. In the dark ages of Jewish hist. which followed that epoch, Heb. was the regular vehicle of the religious life of the Jewish masses in Poland, though Yiddish, the Ger.-Jewish dialect, which they developed as a second tongue, was the language of the home and the one in which their Heb. religious instruction was explained. And when, at the end of the eighteenth century, the Jews in Germany and W. Europe had the opportunity again to enter into the Jewish cultural activity, Heb., the language of literature, not Yiddish, the language of the Diaspora, was the instrument of their Jewish national education. See C. Brockelmann, *Grundriss der vergleichenden Grammatik der semitischen sprachen*, 1908-13; G. Bergstrasser, *Einführung in die semitischen Sprachen*, 1928; D. B. McDonald, *Hebrew Literary Genius*, 1933; M. Waxman, *History of Jewish Literature*, 1930-33; H. and N. Chadwick, *Growth of Early Hebrew Literature*, 1936; N. Bentwich, *Judaea Lives Again*, 1944; C. A. Simpson, *The Early Traditions of Israel*, 1948.

**Hebrews**, see ISRAEL, JEWS.

**Hebrews, Epistle to the**, known also as the **Epistle of Paul the Apostle to the Hebrews**, bears in the oldest MSS. no further heading than the words, 'To the Hebrews,' and even this probably formed no part of the original letter, but was deduced from a reading of the contents. It cannot be proved that the epistle bore the title 'To the Laodiceans' or 'To the Alexandrians,' as has been suggested; and the best MSS. do not give the remark found in the end of the Eng. trans., 'Written from Italy by Timothy.' All other particulars with regard to the epistle are equally matter for conjecture, for there is no sign of any clear tradition with reference to authorship, date, or exact destination. It is morally certain, however, that the authorship is not Pauline, and this view is supported by the continuous tradition of the city of Rome where the epistle first appears, *Shepherd of Hermas* (second century). But this city furnishes us with no positive tradition. In Africa an ant. tradition, which appears in Tertullian's *De Pudicitia*, c. 20, ascribes the authorship to Barnabas, the companion of Paul, while the Alexandrian tradition seems continuously to have ascribed it to the Apostle of the Gentiles himself. Origen held that the epistle was the development by a disciple of some of Paul's oral instructions. It is impossible here to discuss in detail the objections to the Alexandrian

theory, but they are quite overwhelming. Neither vocabulary nor style is Pauline, and the gen. character of the epistle shows that the writer was intimately acquainted with the circumstances of the congregation to which he wrote. There is nothing in this argument to indicate that Hebs. predominate in this congregation, and it is now generally held that Rome was probably its destination. The date is before A.D. 95, but the question of authorship is still unsolved. The names of Luke, Priscilla, Apollos, Clement, and Silas have all been suggested. The aim of the writer was to warn and encourage those Christians—the older view has always been that the epistle was addressed to Christians of Jewish extraction—who, owing to the stress of the times, were inclined to fall away from their allegiance to Christ; and, with this object in view, he sets himself to prove the finality and the perfection of the Christian religion, and its superiority to Judaism. See commentaries by A. B. Davidson, 1882; B. Westcott, 1903; W. C. Wickham, 1910; F. D. NARBOROUGH, 1930; and T. H. Robinson, 1933.

**Hebrews, Gospel according to the**, the most interesting of the apocryphal gospels of the first centuries. Origen and St. Jerome quote it occasionally, and the latter also made Gk. and Lat. trans. of it, but these last have perished. All the quotations from it lead one to consider it as an expanded version of the First Gospel, though it is said to be somewhat smaller than the canonical book.

**Hebrides, or Western Islands**, are situated off the W. coast of Scotland, and are divided into the Outer H. and the Inner H. The Outer H. comprises Long Is. (Lewis with Harris), N. Uist, Benbecula, S. Uist, Barra, the Shianta, St. Kilda, and the Flannan Is. They are composed almost entirely of gneiss, and are therefore sometimes called Gneiss Is. The Inner H. are separated from the Outer group by the Minch and Little Minch. They are a scattered group, including Skye, Eigg, Muck, Coll, Tyree, Lismore, Mull, Staffa, Iona, Kerrera, Colonsay, Oronsay, Jura, Islay, and the Slate Is. The two groups contain more than 500 is., of which about 100 are uninhabited. They are included politically among the cos. of Ross, Inverness, Argyll, and Bute, but have their own Member of Parliament. The total area is 2812 sq. m. Only 200,000 acs. are used as arable land, the is. for the most part being rocky or sandy. There are many small lochs and morasses. The climate is healthy and mild. More than one in ten of the inhab. speak Gaelic only, and 47,000 speak both Gaelic and Eng. The chief tns. are Stornoway, on the E. side of Lewis, and Portree in Skye. The prin. industries are the production of Harris tweed, fishing, the raising of cattle and sheep, and distilling, which is carried on principally in Islay. Livestock, wool, whisky, slate and limestone are exported. There are (1949) about 1300 weavers on the is. of Lewis, many of them, combining this work with croft-management or lobster-fishing. In 1939 the industry was

worth nearly £1,000,000 to the H., but the purchase-tax levied at 66½ per cent seriously damaged it. The is are very popular with tourists and sportsmen. There are bus services, but no railways, air services connect the is., and Stornoway with the mainland.

The H. (anc. *Hebrides*) were invaded by Scandinavians in the sixth century. The Celtic inhab. accepted the Christian faith under the teaching of St. Columba. In the ninth century they were subdued by Harold Haarfager, king of Norway, and remained subject to the Norwegians till

*Memories*, 1923; A. A. MacGregor, *Behold the Hebrides*, 1925; I. F. Anderson, *To Introduce the Hebrides*, 1933; H. Sutherland, *Hebridean Journey*, 1939.

Hebrides, New, see NEW HEBRIDES.

Hebron, 'al-Khalil, or El Chalil (the Arab name is an abbreviation of Khalil al-Rahman, i.e. Abraham, the Friend of God). Anc. city of S. Judah, and one of the oldest continuously inhabited tns. in the world. In Josh. xv. 13 we read of its capture by Caleb; and it is especially venerated by the Muslims because of its associations with the Patriarch Abraham.



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#### THE HEBRIDES, BATAAN AND LOCH LUTHER

1266 The is. were then governed by the Scottish race of Somerled until John Macdonald of Islay made himself Lord of the Isles (1316). They were subsequently annexed to Scotland. Until the end of the thirteenth century the H. also included is. in the firth of the Clyde, the peninsula of Kintyre, the Isle of Man, and the Isle of Rathlin. Kismul Castle in the Outer H. was the stronghold of the piratical MacNeils of Barra, whose exploits are commemorated in the Hebridean song, 'Kismul's Gallery'. It was in the is. of Skye that Prince Charlie took refuge after his defeat at Culloden in 1746. Total pop. 60,000. See also LEWIS & LEWIS-WITH HARRIS. See Sir W. Scott, *Lord of the Isles*, 1852; J. Boswell, *Tour to the Hebrides with Samuel Johnson*, 1898; M. Martin, *A Description of the Western Isles of Scotland*, 1703; J. Macculloch, *Geological Account*, 1819, and W. C. Mackenzie, *History of the Outer Hebrides*, 1902; Seton Gordon, *Hebridean*

who pitched his tent here and was buried in H. Little is known of its earlier hist., but David made it the headquarters of his movement against Jerusalem. Abner was slain by Joab at the city gates, and in it David executed the murderers of Ishbosheth. It was later seized by the Edomites, but was recovered by Judas Maccabaeus. Finally it fell before the Persian. In the O.T. H. is known also by the name Kirjath Arba, in the N.T. as H. only, as (Hebron) under the later Rom. Empire, and as Saint Abraham in the time of the Crusades. Its present day features are high stone houses, narrow streets, and vaulted bazaars at which are sold sheepskin coats and blown glass. The most famous monument of the city is the Haram sacred to Muslims as enclosing the cavern of Machpelah (q.v.) which Abraham purchased from Ephron the Hittite for the burial place of Sarah. Petitions to Sarah are, to this day, dropped by childless women into the cave.

The mosque itself, as distinct from the area, was adapted by the Arabs from a Crusaders' church; in it or within the precincts are the cenotaphs of Abraham and Sarah, which occupy two octagonal chapels, of Jacob and Leah, N. of the area of the Haram, of Joseph, which is in a separate enclosure, and of Isaac and Rebecca inside the church. Excavations carried out in 1926-28 at H. by Dr. A. E. Mader for the Görresgesellschaft estab. the identity of the site of the famous mrkt. of Hadrian; and at the same time were disclosed remains of the Herodian buildings and the basilicas of Constantine and Modestus. The city, which was much improved during the mandatory régime, has a municipal council and a pop. of about 24,000. In Aug. 1929 it was the scene of the worst of the Jewish massacres by Arabs during the outrages of that month over the Walling Wall (*q.v.*, and see also *PALESTINE*).

Hebrus, see *MARTZA*.

Hecateus of Miletus (c. 550-476 B.C.), Gk. historian and traveller, who vainly tried to dissuade his countrymen, the Ionians, from revolting against Persian rule, and, after their defeat, was one of the ambassadors to the Persian satrap, Artaphernes. The only certain work of H. is the *Genealogies, or Investigations* (an account of Gk. traditions and mythology); *Travels round the Earth* is sometimes attributed to him. See fragments in K. O. Muller's *Fragmenta historicorum Graecorum* i. 1891.

Hecate, Gk. goddess, daughter of the Titan Perseus and Asterie, retaining her mighty power under Zeus. She ruled in Heaven, Earth, and the Netherworld, being frequently identified with Selene (moon), Artemis, and Persephone, and sometimes represented with three bodies. As patroness of magic, she was mother of Circe and Medea. She also presided over birth and death. She was worshipped in the wilder parts of Greece, especially at cross-roads, where black victims were sacrificed to her.

Hecatomb, see *SACRIFICE*.

Hecht, Ben (b. 1894), Amer. writer, b. at New York City. Joined the staff of the *Chicago Daily News*, 1914, serving till 1923. Founder and publisher of the *Chicago Literary Times* (1923-25). Wrote *Erik Dorn* (1921), *Gargoyles* (1922), *The Florentine Dagger* (1923), *1001 Afternoons in Chicago* (1923), *The Epistol* (1923), *Humpty Dumpty* (1924), *A Book of Miracles* (1939). In collaboration with Charles MacArthur (Amer. playwright, b. 1895) wrote the plays *The Front Page* (1928), *Twentieth Century* (1933), and the motion pictures *Crime without Passion* and *The Scoundrel*. Charles MacArthur, after working on the staff of *Hecht's International Magazine* (1924) turned to writing plays and motion pictures and became a partner in the Hecht-MacArthur corporation. He collaborated with Ben Hecht in adapting *Wuthering Heights* for motion presentation, and also collaborated with Sidney Howard in *Salvation* (1927).

Hecker, Isaac Thomas (1819-88), Amer. Rom. Catholic divine, and founder of the

community of 'Paulist Fathers.' He founded the *Catholic World* and the Catholic Publication Society, and was the author of *Catholicity in the United States* (1879), *The Church and the Age* (1888), etc.

Heckmondwike, par. and mrkt. tn. of the W. Riding, Yorkshire, England, situated 2 m. from Dewsbury. It is noted for carpet and blanket manuf., and there are coal mines, iron and chem. works, etc. Pop. 10,000.

Hecla, see *HEKLA*.

Hectic Fever. This term literally means habitual fever, and was formerly applied to the regular and recurrent fever of pulmonary tuberculosis, that is, consumption. H. F. may be looked upon as an obsolete term in medicine, as it only indicates a condition of weakness.

Hector, Trojan warrior, the son of King Priam and Hecuba, and the husband of Andromache, by whom he had Astyanax. During the Trojan war he slew Patroclus, the friend of Achilles. The latter, roused to anger, drove back the Trojans, but H. stood his ground, and, in spite of the tears and entreaties of his parents, awaited the approach of the enemy by the Scæan gates. At the sight of Achilles he turned in flight and was pursued three times round the walls of Troy. At last Achilles pierced him with his spear, and, fastening the body to his chariot, dragged it through the dust of the city. At the bidding of Zeus, he gave up the body to Priam, who gave it an impressive burial in the citadel. See Homer's *Iliad*, vi. and xxii., and Virgil's *Æneid*, i.

Hecuba, wife of Priam, king of Troy, to whom she bore Hector, Paris, Cassandra, and many others. On the fall of Troy she fell into the hands of Ulysses, and was carried away to Greece as a slave. At Thracian Chersonesus her daughter Polyxena was sacrificed by the Gks., whereupon H. revenged the deaths of her many children by killing Polymestor, king of Thrace, who had murdered her son Polydorus. She was pursued, but was changed into a dog and leapt into the sea.

Hedge, fence formed of bushes or small trees growing close together or a line of bushes or evergreens, whether intended as a fence or not. For garden Hs. the oval-leaved type of privet H. is one of the best. It grows quickly and can be clipped with impunity and, in ordinary, good soil it can be planted in close formation. A double row, with plants about 15 in. apart in each semi-row, will become reasonably compact when planted. After a year the plants should be pruned back to half their height to induce a bushy appearance and, after a few years, will have grown up and can be clipped to form a neat compact wall of stems and foliage. To ensure that the bottom is impenetrable, combination with English quickthorn provides the best base for a normal boundary. Holly is also a good hedging plant, hardy and indigenous, but is somewhat slow to grow. Young plants are the easiest to establish, and should be planted during May or early autumn. A single row is advisable, with plants spaced



2 ft. apart. The time to cut back is April or Sept. A beech H. does not thrive in all soils, those that are sandy or chalky being most suitable. In heavier soils a good substitute is the common hornbeam and grows more quickly than beech. Laurel and yew were formerly favourites but only the yew has kept in favour and the deep wall-like neatness of an estab. yew H. is an advantage, though the expense is somewhat heavy and available trees are few. Honeysuckle of the *Lonicera nitida* type have been popular H. plants in recent years. They grow rapidly and are not expensive, but they soon get out of hand unless clipped back sev. times during a season. A honeysuckle H. too has the disadvantage of being easily blown about in rough winds. The above-mentioned types by no means exhaust possibilities for Hs. for there are also conifers of various sorts, box and rosemary, escalloniae, and Eucalyptus, cotoneasters and evergreen Oaks.

**Hedgebote**, old term denoting the right of a tenant to cut wood for purposes of repairing hedges, etc., on the land he holds.

**Hedgehog**, name given to sev. species of insectivora, belonging to the family Erinaceidae; they are distinguished from their allies by their spines. *Erinaceus europæus*, the common European H., is generally about 9 in. long, and 4 or 5 in. high; the spines reach a maximum length of 1 in., are sharply pointed and grooved along the sides, and controlled by the muscles of the back. The animal can roll itself into a ball, bristling with spines, and, thus protected, will sometimes fall from a considerable height. The H. eats insects, slugs, mice, frogs, young birds, etc., and has been known to attack vipers; it is sometimes domesticated as a protection against vermin. Hibernation with the H. is a matter of temp. Hs. kept in a warm place will continue active throughout the winter and, with plenty to eat and drink, will take no harm. Even if it sinks into a true torpor the rise of the temp. will rouse the H. again. Young Hs. may arrive at any time from early spring to late autumn, but ordinarily spring litters predominate. The young are born complete with spines, but they are blind and helpless. They grow rapidly, their prickles darken and harden, and their eyes open. Hs. may do some damage, and cases are known of coops invaded and chickens killed, but they are not typical.

**Hedgeley Moor**, tract of moorland in Northumberland, England, situated in the Berwick div., and in the tship. of Beanley, 10 m. W.N.W. of Alnwick. It is noted as the scene of a battle in 1463 between the adherents of the houses of Lancaster and York, in which Sir Ralph Percy was killed.

**Hedge-mustard**, genus of plants of the order Cruciferae. Some species are native of Britain, e.g. the common H., which in its wild state grows plentifully by the wayside to a height of 1½ ft. This has a hairy stem and small pale, yellow blossoms, with a pungent odour. It was formerly used in medicine for catarrh, etc.,

and is now cultivated for domestic purposes.

**Hedge-nettle**, popular name of the species of *Stachys* (q.v.), a genus of labiate plants found in Europe, Asia, Africa, and America.

**Hedge-sparrows**, or *Accentor modularis*, species of passeriform birds belonging to the family Turdidae; it resembles a sparrow, having brown plumage streaked with black.

**Hedin**, Sven Anders (b. 1865), Swedish explorer, b. at Stockholm, son of Ludwig H., chief architect of Stockholm. Educated at Stockholm, Upsala, Berlin, and Halle. His work as an Asiatic explorer dates from 1893, when he began his journey across Asia from Orenburg to Peking. He travelled via Lop-Nor and Tibet, and the journey took him four years. During these years he explored the glaciers of the Mustaghata, and the mts. around the sources of the Yarkand and Ili. In 1899 he made his second Asiatic journey. On this occasion he travelled down the Tarim R. to the Lake Lop-Nor. He then crossed Tibet, travelling S.E., and made two unsuccessful attempts to enter Lhasa. Started on a new journey through China, 1926. He was ennobled by the king of Sweden, 1902. Hon. K.C.I.E., 1909. Pubs.: *Journey through Khorasan and Turkestan* (1892), *Through Asia* (1898, pub. in nine languages), *Scientific Results of a Journey in Central Asia* (6 vols., 1899-1902), *Adventures in Tibet* (1904), *Trans-Himalaya* (vols. I. and II., 1909), *Overland to India* (1910), *From Pole to Pole* (1911), *Trans-Himalaya* (vol. III., 1913), *With the German Armies in the West* (1915), *Bagdad, Babylon, Nineve* (1917), *Jerusalem* (1917), *Southern Tibet* (9 vols., 1917-22), *My Life as an Explorer* (1925), *The Gobi Desert* (1929, Eng. ed., 1931), *Jehol, City of Emperors* (1931), *Lop-Nor, the Wandering Lake* (1937), *Riddles of the Gobi Desert* (1933), *A Conquest of Tibet* (1935), *Scientific Results of the Sino-Swedish Expedition 1926-33* (23 vols., 1937-42), *Chiang Kai-shek, Marshal of China* (1939), *History of the Expedition to Asia*.

**Hedjrah**, see HEJRA.

**Hedmark**, co. of Norway, on the Swedish border, with Akhus to the S., Oppland to the W. and S. Trondelag to the N. Area 10,621 sq. m. Pop. 167,600.

**Hedon**, a municipal bor. of E. Riding, Yorkshire, England, in the Holderness parl. div., situated 8 m. E. of Hull. The industries are chiefly agric. and there are large brick-fields. Pop. 1300.

**Hedonism**, word of Gk. derivation signifying pleasure, hence, in ethical science, the theory that pleasure or happiness of one kind or another is the chief aim in life. Hedonistic theories have been held from the earliest times. According to one view, happiness is the chief good and moral end for each individual; according to the other, the well-being and pleasure of the general community and of all sentient creatures is the main thing to be desired. The earliest and most extreme type is that of the Cyrenaic and Epicurean schools, who taught that the

sentient pleasure of the moment is the only good for mankind. This view is known as Egoistic H. Opposed to this is Universalistic H., which owes its growth to modern writers, such as Hume, Bentham, and Mill, whose point of view is based on a wider conception of life, and who maintain that the only real happiness is that of the community—or, at any rate, the majority; the criterion is society, not the individual. Passing on to the theories of Utilitarianism and Social Ethics, one is confronted by the problem of reconciling and adjusting the claims of the individual with those of society. An important exposition of the theory of Utilitarianism is contained in H. Sidgwick's *Methods of Ethics*, 1871. He associates the hedonistic theory of the moral standard with an intuitive theory of knowledge which utilitarians do not usually hold. See also J. H. Muirhead, *Elements of Ethics*, 1892; and J. S. Mackenzie, *Manual of Ethics*, 1897; J. Watson, *Hedonistic Theories*, 1895; E. Albee, *History of English Utilitarianism*, 1902; C. Gore, *Philosophy of the Good Life*, 1930; H. L. S. Samuel, *Practical Ethics*, 1935.

Heem, Jan Davidsz van (c. 1600–84), Dutch painter, *b.* at Sandrart, or, according to Descamps, at Utrecht, son of David van Heem (c. 1570–1632), a noted still-life painter. One of the pictures of the elder van H. is in the National Gallery, London. The son surpassed his father in the variety of his still-life subjects and in technical equipment and was much the greater artist. He entered the Guild of Antwerp in 1635 and two years later became a burgher of the city. In 1667 he moved to Utrecht. His paintings chiefly consist of magnificent vases of flowers and fruit and rich garlands against a background of green. Examples of his work are in many Ger. galleries, and at the Louvre, The Hague and Amsterdam, and he is also represented in the Wallace Collection, London. His son, Cornelis van Heem (1631–95) was also a painter. Heemskerck, Maerten Jacobez, often called Maerten van Veen (1498–1574),

Dutch painter, *b.* at Heemskerck in Holland studied his art under Cornelisz Willemsz and John Schoreel, painters at Haarlem. In his early work he imitated Mabuse, but during a visit to Rome (1532–35) he came under the direct influence of the great masters. His pictures are well represented in the galleries of Europe, but in England he is best known by his drawings. His chief works are: a 'Crucifixion' (in the Ghent Museum), 'Judgment of Momus' (in the Berlin Museum), 'Triumphs of Silenus' (in Vienna), and 'St. Luke Painting the Likeness of the Virgin and Child' (at Haarlem).

Heemstede, tn. 3 m. S. of Haarlem in N. Holland. See studies by L. Prehlias, 1911 and M. J. Friedländer, 1936. Pop. 23,700.

Heerde, tn. 29½ m. N.E. of Arnhem in the prov. of Gelderland, Holland. Pop. 5500.

Heere, Lucas de (1534–84), Flemish painter, inherited his artistic talent, as his mother painted miniatures and his father was a sculptor. There is a portrait of Queen Elizabeth at Hampton Court, where H. has flatteringly represented Aphrodite and the sister goddesses con-founded and dismayed by the beauty of the earthly queen. H. is also the author of *Boomgaard der Poëzie* (Garden of Poetry), 1565.

Heeren, Arnold Hermann Ludwig (1760–1842), Ger. historian, *b.* at Arbergen, near Bremen. His *De Encomiis* (1785), attracted attention, with the result that in 1787 he became a prof. of philosophy, and in 1801 of hist., at Göttingen. He is regarded as the pioneer of the modern method of historical study; he did not lay so much stress on political events as on the economic relations of states. His chief works are: *Ideen über Politik, den Verkehr, und den Handel der vornehmsten Völker der alten Welt* (1793–96, Eng. trans. 1833), *Geschichte der Staaten des Alterthums* (1799, Eng. trans. 1840), and *Kleine historische Schriften* (1803–38). His *Historische Werke* were pub. at Göttingen in 15 vols. (1821–30).

Heerenveen, tn. 17 m. S.S.E. of Leeuwarden in the prov. of Friesland, Holland. Pop. 23,400.

Heerlen, tn. 12½ m. E.N.E. of Maas-tricht in the prov. of Limburg, Holland. Pop. 56,300.

Hegel, Georg Wilhelm Friedrich (1770–1831), *b.* at Stuttgart, was the last of the four great Ger. idealist-philosophers of that period, the others being Kant, Fichte, and Schelling (*q.v.*). He was educated at the univ. of Tübingen, where began his friendship with Schelling, who, although younger by five years, must rank as H.'s precursor by virtue of his extraordinary precocity—he had pub. sev. philosophical papers of importance even during his student days. In 1793 H. left Tübingen, and lived by teaching, principally in Frankfurt. But whilst thus engaged, his mind, stimulated by his studies of Wolff, Fichte, and Plato, was slowly maturing, and in 1801 he pub. a brilliant comparative critique on the systems of Fichte and Schelling, somewhat to the latter's



W. F. Mansell

**HEEMSKERCK: SELF-PORTRAIT**  
A painting in the Fitzwilliam Museum, Cambridge. The building on the right of the face is the Colosseum at Rome.

advantage. The same year he became a prof., at the univ. of Jena; during the five years that he spent here, he became more intimate with Schelling, and together they issued a philosophical journal. At this time, Napoleon was pressing against the Prussians, and the Battle of Jena (1806) caused the univ. to be temporarily disbanded, with the result that H. had to accept the editorial duties of a small newspaper for a time. Before long, however, he had once more secured an appointment as teacher in Nuremberg, and it was during the nine years he spent in that position that he married (1811). Meanwhile, his first work of real significance had been pub., *Phänomenologie des Geistes* (1807, Eng. trans. *The Phenomenology of the Spirit*, 1894), and the *Wissenschaft der Logik*, the first vol. of his definitive philosophy, followed in 1812 (Eng. trans. *Science of Logic*, 1894). In 1818 he left Nuremberg for a professorial chair at Heidelberg, where in the same year he produced his great encyclopædia of the philosophical sciences (*Enzyklopädie der philosophischen Wissenschaften*), and two years later he succeeded Fichte in the chair of philosophy at the new univ. of Berlin, a post which he filled with distinction until his death, from cholera, thirteen years later. It was here that he wrote, amongst many other important works, *Grundlinien der Philosophie des Rechts* (1821, 1837 trans. *The Philosophy of Right*, 1896). During his later years he was esteemed the leading force in contemporary Ger. philosophical thought.

After his death many of his hitherto unpublished lectures and essays on religion, hist., and aesthetics were collected and pub. by a circle of his chief students and friends. Hegelianism must be studied in relation primarily to the philosophy of Kant. Kant had contended that, whilst the value of an object was purely in the cognition thereof, and not in any degree intrinsic, a dualism existed between that object and the cognition, i.e. between the noumenon and the phenomenon. H., in his development of this idea, evolved the dualism out of consideration by identifying reality with rationalism. Agreeing with Kant that it is impossible to consider life philosophically as a purely material existence apart from essential idea, he urges that matter is non-existent except as a perception, that is to say, an expression to an individual mind of some essential idea. He therefore proceeds to examine, not the form, but the idea, of thought; since what is true of a perception is true of the object. Hegelianism is thus the outcome of the idealisms of Kant, Fichte, and Schelling, although less romantic and more absolute; it is divided into three headings: (a) logic, (b) natural philosophy, (c) philosophy of spirit. *The Science of Logic*, in which his whole system is traced out, both logically and metaphysically, has been described as the only production of modern thought worthy to rank with the *Metaphysics* of Aristotle; in it, H. analyses and systematises the fundamental conceptions that

underlie external forms by the method of 'dialectic,' for which he is largely indebted to Fichte. His *Natural Philosophy* is a concrete application of this analysis to science and to the social and spiritual individuality of man; but, on account of his lack of deep scientific knowledge, it is of very little value. *The Philosophy of Spirit* is a further application of *Logic*; in this, II, develops the moral and abstract element of the work in correlation with the idea of evolution. Apart from the purely scientific significance of H.'s writings, they contain much of importance on religion and the aesthetics of art. In religion, he was influenced chiefly by Fichte's subjective idealism. His views on art are of great interest; to him, art is a thing apart from nature, for he holds that, since art should express idea in sympathetic form, nature is not intrinsically or necessarily beautiful, but is dependent for its beauty on individual perception. He classifies art, on this basis, into: (1) Symbolic, wherein the expression of indefinite ideas is attempted on a colossal scale (e.g. Oriental architecture); (2) Sensuous or Classical, which is best exemplified in Gk. sculpture (the pagan aesthetic of idealised humanism); and (3) Christian Art, a return to the symbolic in style of idea, vague and indefinite in its concept of infinity and omnipotence, but more exquisitely expressed in the narrower limitations and more plastic media of painting, music, and poetry. H.'s teachings were subsequently developed in two directions, one of them on the lines of his own idealism, the other leading to arrant positivism. Of these the latter is more powerful, and tends to atheism and radicalism under Strauss, Feuerbach, and Bruno Bauer, who claim their systems to be directly evolved from H., in spite of the orthodox and conservative sympathies he professed.

H.'s philosophy was the basis of the metaphysical speculations of Karl Marx, and his idealisation of the State may be said to be the underlying principle of the ideology of Fascism (see on this Crossman's *Plato To-day*). It is not without interest to note that in the opinion of Nietzsche, the name of Schopenhauer was better known than that of H., and yet that Schopenhauer, unlike H., was nonetheless a solitary being, who had failed of his effect. His complete works were pub. in 1832-15 (18 vols.) and in 1927-40 (26 vols., ed. by H. Glockner). See J. Hutchinson Stirling, *The Secret of Hegel*, 1865; *Lectures on the Philosophy of Law*, 1873; J. Rosenkrantz, *Hegel's Leben*, 1844; *Hegels Naturphilosophie*, 1863; and *Hegel als deutscher Nationalphilosoph*, 1870; O. Kostlin, *Hegel*, 1870; F. W. Nietzsche, *Unzeitgemässe Betrachtungen (Thoughts out of Season)*, 1873; A. Seth, *Development from Kant to Hegel*, 1882; and *Hegelianism and Personality*, 1887; K. Caird, *Hegel*, 1883; P. Barth, *Die Geschichtsphilosophie Hegels und der Hegelianer*, 1890; R. Macintosh, *Hegel and Hegelianism*, 1903; N. Hartmann, *Die Philosophie des deutschen Idealismus*

(vol. II.), 1928; C. Nink, *Hegels Phänomenologie des Geistes*, 1931; K. Löwith, *Von Hegel bis Nietzsche*, 1941; T. M. Knox (ed.) *Hegel's Philosophy of Right*, 1942.

**Hegesias**, Cyrenaic philosopher, lived in the reign of Ptolemy Philadelphus (309-246 B.C.) and was a disciple of Parmenides. In the main he taught the doctrines of Aristippus, the founder of his school, but he so ingrained in his pupils an indifference to life and a contempt for death, and at the same time the belief that it is idle to look for happiness where the soul is for ever imprisoned in a suffering frame, that he drove many of them to suicide. This gloomy tendency of his teaching became so alarming that Ptolemy is said to have put a stop to his classes. He further maintained the wisdom of complete egoism and the instability and unreality of such fragments of the brain as kindness and friendship.

**Hegesias** (fl. c. 250 B.C.), Gk. historian of Magnesia who enjoyed great repute as an orator. Cicero refers to him and mentions how he spoilt the pure Attic Gk. by the heedless adoption of Asiatic idioms.

**Hegesippus** (c. 350 B.C.), Athenian statesman and orator, and a staunch supporter of the anti-Macedonian policy of Demosthenes. He became one of the ambassadors to Macedonia in 343 B.C., whose mission was principally to discuss the restoration of Halonnesus. In connection with this subject, H. delivered his famous oration 'De Halonneso'.

**Hegesippus** (c. A.D. 120-180), early Christian writer, of Palestinian origin, lived under the emperors Antoninus Pius, Marcus Aurelius, and Commodus. It is a disputed question whether he was a Judaistic Christian or not. He wrote a treatise, *Five Memorials of Ecclesiastical Affairs*, on Christian literature, unity of church doctrine, paganism, heresy, and Jewish Christianity, fragments of which are found in Eusebius. From Eusebius we learn that H. journeyed to Rome, visiting Corinth on the way. He compiled a list of the Rom. bishops down to Anicetus (A.D. 156-67), and is looked upon as the father of church hist. See M. J. Routh, *Reliquiae Sacrae*, 1814-18; and J. E. Grabe, *Spicilegium*, II., 1711.

**Hegira**, see **HEJIRA**.

**Hegyalja**, or **Hegyallya**, range of hills which runs S. between the valleys of the Bodrog and Hernád R., in N. Hungary. An extreme offshoot of a Carpathian spur, they are in the midst of the dist. where the Tokay wines are produced.

**Heiberg**, Johan Ludvig (1791-1860), Dan. dramatist, was the son of the celebrated novelist who afterwards became Baroness Gyllembourg-Ehrensvärd, and of the political writer Peter H., who was exiled in 1800. He attended Copenhagen Univ. and began publishing in 1814, when he brought out two romantic dramas. However, both in his satire *The Prophecy of Tycho Brahe* (1817), and later, when he ed. *Kjöbenhavns Flyvende Post* (1827-30), etc., he persistently mocked at the ex- and sentimentalism of Ingemann

and other popular Romanticists. A comedy entitled *A Soul after Death* (1841) is one of the best things he wrote, whilst a little play called *The Nut Crackers* (1845) contains his most pungent satire.

**Heide**, tn. near the N. Sea, 34 m. N.N.W. of Glückstadt, in Schleswig-Holstein, Germany. Pop. 11,800.

**Heidegger**, Martin (b. 1889), Ger. philosopher. He came into prominence in 1928 when he pub. his chief contribution to philosophy, *Time and Being*. In 1933, when he was rector of Freiburg Univ., he owed allegiance to Hitler's party; but, thinking he had made a political error, he relinquished the rectorship in 1934 and, in 1935, having reached the peak of his fame, he was invited, but declined, to become rector of Berlin Univ. Though his reputation stood high in Germany before the war, it did not then, apart from philosophers, spread internationally, and yet to-day, when his influence is marked in many foreign countries, it is almost non-existent in his own. H.'s philosophy has been described as atheistic existentialism, mainly because his *Time and Being* is concerned essentially with the problem of being-in-the-world; but he himself repudiates any connection with existentialism (q.v.), with Sartre (q.v.) or even with Kierkegaard. By existence H. means man's determination to 'stand out into the truth of being' or in other words, to pierce the meaning of his existence. If man fails to transcend the limits of his world he is condemned to death and nothingness. He must 'experience the anguish of nothingness, he must first exist in the nameless, not for its own sake, but so as to realise that this nothingness is the path to being. But the problem whether a man shall be or shall not be is an event that takes place in the experience of dread. The struggle with this dread determines whether man shall annihilate nothingness and thus perceive its other side, that of being; or whether nothingness shall annihilate man. H.'s nihilism is comparable with Dostoevsky's interpretation of suffering, which to the Russian writer, not only awakens conscious thought but also has the power to redeem evil. H. is atheistic in the sense that he believes that God is absent from the world as well as that man has lost his dignity; whether God will reappear and man regain his dignity, has no place in H.'s philosophy, other than the consideration of the possibility of a God and of man's dignity. Both these possibilities reside in being as such, and being is above the human and above the divine. This much discussed philosophy may therefore be regarded as a part of Ontology (q.v.) in the sense in which Wolff defines it—that part of theoretical philosophy which deals with being in general as opposed to particular entities. The bulk of H.'s writings, including the second part of *Truth and Being*, as well as books on Nietzsche, Nihilism, and Logos are still in manuscript and unpublished. See A. Flecher, *Die Existenzphilosophie Martin Heideggers*, 1935; A. de Waelhens, *La Philosophie de Martin Heidegger*, 1946.

Heidelberg, tn. on the l. b. of the Neckar some distance from its confluence with the Rhine, 54 m. by rail from Frankfurt-on-Main, and 12 m. E.S.E. of Mannheim in Baden, Germany. The chief glory of the picturesque old city, which is guarded by the forest- and vine-clad slopes of Heiligenberg and Königstuhl, is the castle, which looks down on the riv. from a summit of over 300 ft. Begun in the thirteenth century, the castle was still being enlarged and beautified in the seventeenth century, but was partially blown up by the Fr. in 1689. In 1764 it was struck by lightning and was reduced to its present state of graceful ruin. The huge vat, known as the Great Tun of H., which has a storage capacity of 46,732 gallons, is entered from the castle courtyard. The famous univ. was founded in 1386 (or 1386). From here during the Reformation period Calvinist doctrines were disseminated far and wide, but for the thirty years of war (1618-48) its hist. is almost a blank. The valuable library, which Otto Henry began to collect, and which has at different times been housed in the Vatican and at Paris, now contains about 4000 MSS., 3000 papyri, besides over 500,000 vols. Hitler founded two new chairs at the univ. of H., one of folk hist. or 'folklore,' and the other to direct the study of the hist. of the art of war. These two subjects were both branches of study in which the Nazis had a special and peculiar interest, and with the closing after the war of these two depts. of the univ., what seems to have been the Nazi party's sole positive contribution to the academic life of H. was brought to an end. A number of former profs. who had been dismissed by the Nazis were brought back to the univ. by the allied occupying authorities. H. is not only the oldest Ger. Univ., but also in its hist. it has a name famous for religious reform and generally reforming thought, and it is probably for these reasons that the Nazis selected H. to be above all others the home of Nazi culture and ideas; but notwithstanding this pollution, something of the old tradition of H. lived on under the Nazis and was a useful foundation on which to bring about the univ.'s restoration after the war, though the mental desert left by the Nazis presented a desolate prospect. H. was practically untouched physically by the war, save for the pink stone bridge which was cut in the middle, and all the univ. buildings were intact, but the problem was how to recreate a clean untainted academic life within the buildings; for the real problem of all the Ger. univs. after the war was not merely to re-educate their students but to start teaching again from the beginning the actual habit of thought. There is an excellent observatory on the Königstuhl (built in 1894), and among the anti-quoties of interest are the Protestant Peterskirche, where Jerome of Prague planned up his theses in 1460, and the fine Gothic Heilige Geist Kirche, which also dates from the fifteenth century. H. is of some commercial importance, more especially as trunk lines radiate to Karls-

ruhe, Würzburg, Mannheim, and Speyer, besides to Frankfurt. The first president of the Ger. Republic (1919), Friedrich Ebert, was b. at H. Pop. 84,600.

Heidelberg, name of a tn. (58 m. S. by E. of Pretoria) and dist. of the Transvaal, S. Africa. The tn. lies 5029 ft. above the sea on the slopes of the Rand, and was founded in 1865. Besides being a health resort it is a gold-mining centre for the Witwatersrand fields, etc. Coal is found in the neighbourhood. Pop. (European) 2600; (other) 4500.

Heidelberg Man, remains, lower jaw and teeth, of a sub-man of the Pleistocene Age found, in 1907, at Mauer on a trib. of the Rhine. Anthropologists regard the remains as being of a later period than the famous Piltdown man (q.v.) though earlier than the Neanderthal. See O. Schoetensack, *Der Unterkiefer des Homo Heidelbergensis*, 1908.

Heidenheim, tn. in Württemberg, Germany. It was once an anct. Rom. settlement. The picturesque ruined castle commands the tn. Pop. 24,000.

Heidenstam, Carl Gustaf Verner von (1859-1940), Swedish man of letters; b. at Olshammar in Nerike prov. of noble parentage. As a boy he had to travel for his health, and saw Greece and the E. At Rome, he was for two years pupil to the Swedish painter Kronberg; he studied also at the Ecole des Beaux Arts, Paris. He then lived some years in Switzerland, and returned to Sweden, where he developed as a painter in words instead of pigments. The greater part of his work consists of poetry and short tales. He wrote only one book that can properly be called a novel—*Endymion* (1889), a story of the E. His famous *Karolinerne* (1897-98) is a collection of tales about Charles XII. Some of his other works are: *Vallfärd och Vandringar* (poems, 1888), *Från Col di Tenda till Blocksberg* (sketches, 1888), *Rennsöarna* (1889), *Dikter* (poems, 1895), *Tänkar och Teckningar* (1899), *Sankt Gören och Draken* (1900), *Folke Filbyter* (peasant-legend, 1905), *Bjälboarvet* (sequel to *Folke Filbyter*, 1907), *Folkungatradet* (1905-07), *Svenskarna och deras hördingar* (the Swedes and their Chiefs, 1908-09), *Stridskrifter* (1912), *Nya Dikter* (1915), *Dikter—Med raderingar av Jürgen Wrangel* (1927). H. stands for colour and romance as against such realism as that of Strindberg. He was of aristocratic and anti-levelling temper. He received the Nobel Prize in 1916 and the Henrik Steffens Prize in 1938. A new Eng. trans. of *Karolinerne*, called *The Charles Men*, appeared in America in 1920.

Heifetz, Jascha (b. 1901), Polish violinist, b. in Vilna, studied at the St. Petersburg conservatoire, and made his first public appearance before he was five years of age, at Vilna, and in Petrograd at ten. Has played with phenomenal success in Germany, Austria, and the U.S.A.

Heijermans, Herman (1864-1924), Dutch novelist and dramatist, b. at Rotterdam. As a young man he was a frequent contributor to Amsterdam journals, under the pseudonym of 'Samuel Falkland.' He

subsequently made a marked success with novels and social dramas.

Heilbronn, manufacturing tn. of Württemberg, Germany, on the Neckar, 33 m. by rail N. of Stuttgart, having fine views of mts., the Black Forest, and the Voeges. It is an anct. tn. of historical interest, containing many old buildings, such as the Gothic church of St. Kilian, a Rathaus, the Gotzensturm, and Schönbühler Hof, as well as fine modern buildings. It has reminiscences of the Emperor Charles V., Götz von Berlichingen, Gustavus Adolphus, and Schiller. The chief manufs. are chems., machinery, paper, sugar, salt, cigars, coffee, etc. At H. the Gers. defended the Neckar line against the Amer. Sixth Corps for some days and then fought in the tn. for a week before it was cleared on April 12 (1845). Pop. 77,600.

'Heil Dir im Siegerkranz,' Prussian national anthem. The words are by Balthasar Gerhard Schumacher, and the music is that of 'God save the King.' John Bull's *Ayre*, 1619, is an early version of the same tune, but the music as it is now sung first appeared in 1745, the reputed composer being Henry Carey.

Heilsberg (Polish, Lidzbark Warmiński), tn. of Poland (formerly E. Prussia) with dye works and tanneries, 39 m. S. of Kaliningrad (Königsberg). It is situated at the confluence of the Alle and Simser. There is an old castle. Pop. 4200.

Heilsbrunn (also Kloster-Heilsbrunn), vill. 16 m. S.W. of Nuremberg by rail, in Middle Franconia, Bavaria, Germany. It is famous for the Cistercian monastery which Bishop Otto founded in 1132, and which fl. until 1555. High interest attaches to a series of sepulchral monuments to members of the Hohenzollern family, and also to the church, which is a basilica in the Romanesque style. Pop. 1700.

Heilunkiang, prov. of Manchuria, containing 25 cos. with Pehán as cap. It is an elevated region with an area of 765,000 sq. m. The most important products are timber and gold. Pop. 2,564,000.

Heimdallr, in Norse mythology, the god of light. He guarded the frontiers of Himnaborg (heaven) and the rainbow-bridge (Bifrost) against the assaults of the giants. Like Oliver Hoder of Teutonic myth, his hearing was so acute that he could hear the grass grow. Always in mortal feud with Loki for the recovery of Freyja's stolen necklace, and ultimately they slew each other.

Heine, Heinrich (1797-1856), Ger. poet and journalist, b. at Düsseldorf of Jewish descent. He was editor at the Lyceum in Düsseldorf, and began life at Hamburg in the banking business of his uncle, Solomon H., with whose daughter Amalie he incidentally fell in love. On account of his failure in business, his uncle sent him to study law at Bonn (1819), where he gave signs of literary talent. A. W. von Schlegel being one of his earliest admirers and advisers. In the following year he left Bonn for Göttingen, but before long became entangled in a duel, and found it

advisable to leave there also. Arriving in Berlin, he was soon an eager student of Hegel; his new environment and friends, including Fouqué, Rahel, Chamisso, and the Humboldts, stimulated his genius, and the first vol. of *Gedichte* appeared in 1821. Turning again to law for a while—for the poor success of his tragedies *Almansor* and *William Ratcliff* (1823) had discouraged him—he graduated in 1825. The same year he spent a holiday in the Black Forest, thereby gaining the material for the first vol. of *Reisebilder* (1826), which attracted much attention by its originality and brilliance of style. Meanwhile, he had become baptised in the Christian faith, purely, however, for social purposes. The next few years were spent visiting London, Munich, and Italy; the



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remaining three vols. of *Reisebilder* were pub., and also the *Buch der Lieder* (1827). After another visit to Berlin (1829) and a brief sojourn in Hamburg (1829-31), H. made Paris his home, quite severing his ties with Germany; and he only revisited it for short periods in 1843 and 1847. In Paris—the new Jerusalem—he was welcomed by the brilliant romantic circle—Hugo, George Sand, De Musset, Gautier, Sainte-Beuve, Chopin, Berlioz, and Delacroix; and he settled down to journalism and letters, *De l'Allemagne* (1835), and *Die Romantische Schule* (1836), being his chief works of this period. He first met 'Mathilde' in 1834—Eugénie Mirat (d. 1883), a shop-assistant—first his mistress and subsequently (1841) his wife; and, although it is hard to understand the fascination of a badly-educated, shallow-minded grisette for H.'s sensitive artistic soul, their mutual devotion was certainly unwavering. During H.'s early years in Paris, his uncle had allowed him 4000 francs a year, but his growing separation

from the Hamburg family made it necessary to look elsewhere for support, and from 1837 to 1848 he was in receipt of a pension of 4800 francs from the Fr. gov.—ostensibly as a political refugee, although he was not associated with the young Ger. party whose revolutionary ideas had exiled them to Paris. This was the last step in his absolute self-alienation from his compatriots; his writings had already been condemned by the Frankfurt Confederation Parliament (1835). *Der Salon* (4 vols.) appeared between this time and 1840, including his famous essays, 'German Philosophy and Literature,' written for the *Revue des Deux Mondes*. *Deutschland*, a political satire in verse, was pub. in 1844, and *Atta Troll*, 'the Swan song of Romanticism,' in 1847. From 1848 to 1856 H. was a victim to spinal disease, but through the agonies of this last long illness, during which Mathilde nursed him devotedly, he retained full control of his mental faculties, as his *Romanzero* (1851) and *Neueste Gedichte* (1853-54) bear witness. His Memoirs were probably destroyed; at any rate, they were withheld from pub. for family reasons, when in 1837 his Hamburg pension was restored; doubtful fragments were pub. in 1884, but their importance is as slender as their interest. During the Nazi regime (by 1910) all the works of H. were banned in Germany. H. gave a prophetic warning to France of the revolutionary forces at work in Germany, in a passage which appears in his *Religion and Philosophy*. (The book was pub. in 1835, but the passage in question was deleted from the first Ger. ed. by the Prussian censor and appeared only in Fr. trans.).

H.'s genius was moulded by his Ger. birth, Jewish descent, and Gk. culture; Nietzsche wrote that H. and himself were the greatest literary artists Germany had ever produced. He was the *grand maître* of lyric expression; for his sense of the tragic and the beautiful was passionately intense. Gautier says that 'Heine combined the purest Gk. form with the most exquisite modern inspiration; he was a true Euphorion, the child of Faust and lovely Helen.' His work is the emotional panorama of a soul almost neurotic in its exquisite sensitiveness, its keen appreciation both of beauty and ugliness, of joy and despair. And his style is equally nervous in his portrayal of them both; on the one hand, the lyric-idealist, sometimes sentimental to a degree bordering on the ridiculous; on the other, the bitterly ironical cynic, often malicious in his satire, merciless and irreverent to the most sacred feelings of others. But, confining attention to broader issues, he was the first and greatest of a type of which, unfortunately, a mediocre multitude has since arisen: a self-centred, narrow soul, of artistic and irritable temperament, aiming at hedonism, fretting at the ruin of reality, a poet of happy illusions that bring but sadness. Whilst expressing dis-favour of Romanticism, he was one of its leading exponents; and whilst often coarse and brutal in his attitude towards

love, he was yet conscious of the supreme poetry of passion. Indeed, it is as the poetic psychologist of love that H. is pre-eminent; his *Lyrisches Intermezzo* (1823) and other poems have a wonderful fascination for translators, and have been set to music by nearly all the great song-writers—Schumann above all, Liszt, Rubinstein, Brahms, and Grieg. H.'s idealism towards life was a sanguine hope for the brilliant and glorious future of mankind—a future to be realised by fostering imagination and aesthetic culture.

A Fr. ed. of his works was pub. by H., De Nerval, and others (14 vols., 1852-68); other eds.: (Ger.) A. Strodtmann (21 vols., 1861-66), E. Elster (7 vols., 1887-90), and O. Walzel (10 vols., 1910-15), (Eng.) C. G. Leland (13 vols., 1892-1906). See lives by A. Strodtmann, 1873; W. Stigand, 1875; W. Sharp, 1888; and M. J. Wolf, 1921; also J. Weldekamp, *Traum und Wirklichkeit in der Romantik und bei Heine*, 1932; F. H. Wood, *Heine as a Centre of his own Work*, 1934; L. Marcuse, *Heinrich Heine, a Life between Past and Future*, 1934.

Heineccius, Johann Gottlieb (1681-1741), Ger. jurist, b. at Eisenberg and educated in theology and law at Leipzig and Halle. He was made prof. at Halle of philosophy (1713), and of law (1720). He then went as prof. of law to Franeker and to Frankfurt-on-Oder, but in 1733 returned to Halle, where he d. His works display great learning, especially in Rom. and Ger. law. The chief are: *Historia Juris Civilis Romani ac Germanici* (1733), *Elementa Jurs Germanici* (1736), and *Elementa Juris Nature et Gentium* (1737), trans. into Eng., 1763).

Heineken, Christian Heinrich (1721-25), Ger. infant prodigy; b. at Lübeck; son of a painter. Spoke at ten months, knew story of Pentateuch at one year; at two was familiar with sacred hist.; at three with general hist., geography, Lat., and Fr. Could converse intelligently on subjects of his studies. Visited king of Denmark at Copenhagen, 1724.

Heinemann, William (1863-1920), Eng. publisher; b. at Surbiton, Surrey; eldest son of Louis H., native of Hanover. Educated at Dresden and at home. Studied music in Germany; acquired taste in art. After gaining experience with Trubner of Ludgate Hill, opened as publisher, 1890, with Hall Caine's *Bondman*. Pub. for many notable authors; and wrote plays: *The First Step* (1895), *Summer Moths* (1898), *War* (1901). President, Publishers Association, 1909-11.

Heinicke, Samuel (1729-90), founder of a deaf and dumb school in Germany. He was b. at Nautschütz, Germany, and fought in the Seven Years' war, being taken prisoner at Pirna. He had previously supported himself by teaching, and had one deaf and dumb pupil in 1754. In 1768 he taught a deaf and dumb boy to talk, and ten years later founded at Leipzig the first deaf and dumb institution in Germany. He adopted the methods laid down in Anshaus's *Surds loquens*. See H. E. Stötzner, *Samuel*

*Heinicke*, 1870; and G. and P. Schumann, *Neue Beiträge zur Kenntnis Samuel Heinicke's*, 1899.

**Heinkel**, Ernst (b. 1888), Ger. aircraft designer, b. at Grunbach, Württemberg. Founded the H. Aircraft works at Wassemünde in 1922, first developing service models of seaplanes, and later light, fast, passenger aircraft. His fighter (H.E. 111) and twin engine bomber (H.E. 111), and other types, were used by the Luftwaffe in the Second World War.

**Heinrich von Meissen** (1280-1318), Ger. lyric poet and wandering singer, b. at Meissen of humble burgher parentage. He is generally known by the name of *Frauenlob*, a nickname which may allude to his songs in praise of women, though some suggest that the reference is to his song, *Die Heilige Jungfrau*, or again to a song in which he defends the use of the word 'Frau' instead of 'Weib.' His youth was passed in straitened circumstances, but he gradually won a reputation as a singer at the courts of the Ger. princes. In 1278 he was in the army of Hapzburg, and in 1286 at Prague at the knightly of Wenceslaus II. It is said of him that he founded the first school of Meistersingers at Mainz. He died at Mainz, and the women of the city bore him to his grave in the cloisters of the cathedral and erected a monument, by Schwanthaler, to his memory. See F. H. Von der Hagen's *Minnesinger* (vol. IV) 1838; A. E. Kröger's Eng. trans. of his *Cantica Cantorum*, 1877; and H. Kiesel, *Die Ethik Frauenlobs*, 1926.

**Heinse**, Johann Jakob Wilhelm (1719-1803), Ger. novelist, translator, and art critic, b. at Langewiesen, Thuringia. He was a disciple of Wieland, and had some influence on Goethe. He studied art in Italy, where he also trans. Tasso's *Gerusalemme Liberata* and the *Orlando*. His masterpiece, *Ardinghello* (1787), contains remarkable digressions on the plastic arts, and another romance, *Hildegard von Hohenhal* (1796), gives his ideas on music. He served the elector of Mainz, and became state librarian. See J. Schöber, *Heinse, sein Leben und Werke*, 1882; and studies by A. Zappel, 1930; and A. Leitzmann, 1938.

**Heinsius**, Anthony (1641-1720), Dutch statesman and confidential agent of Wm. Prince of Orange, b. at Delft, and studied law at Leyden. In 1688 he was grand pensionary of Holland and guided Dutch politics until his death. In his zeal for his prince and Protestantism, he incurred the enmity of France.

**Heir**. The H. in Eng. law was the person who took by descent (*q.v.*) the lands, tenements, and hereditaments (*q.v.*) of another, the ancestor. There were also Hs. by custom, who were entitled by certain customary modes of descent to succeed to customary freeholds, a peculiar species of copyhold tenure, which prevailed in the N. of England, and within manors of the tenure of anct. demesne, or tenure by copy of court roll, but not expressed to be at the will of the lord of the manor. As noticed in the article INHERITANCE, the H. was an uncertain person till

the death of the ancestor, on the principle that no one is the H. of a living person. Before the ancestor's death, a person could only be an *heir-apparent*, i.e. one whose right is certain and indefeasible, provided he outlived the ancestor and the latter *d.* without making a will at all, or *d.* intestate as to some part of the real property; or an *heir-presumptive*, i.e. one who, if the ancestor should die immediately, would succeed as H., but whose right to succeed might be defeated by the contingency of a nearer H. being b.; e.g. an only daughter's presumptive right would be defeated by the birth of a son. (For the former rules of descent in Eng. law to real property, see under INHERITANCE.) The old rule of primogeniture has disappeared, and with it the equally old institution of the heir-at-law; but for the purpose of tracing title to real property, it is still essential for lawyers to know the old law. The term H. is still used popularly to denote the Hs. to the throne or to a title. **Heirloom** (A.-S., *loom*, limb or member). Hs. are those personal chattels which, by special custom, descended on death with the freehold lands of inheritance with the occupation of which they are connected; whereas ordinary chattels devolved on the executor for distribution amongst the next of kin. To-day such Hs. are practically unknown, and the word is used popularly to denote pictures, furniture, jewels, etc. vested in trustees to hold for the person who for the time being is entitled to the possession of a settled home and are known as settled chattels. By the Law of Property Act, 1925, the rules as to the settlement of real and personal property are assimilated. The former special devolution of Hs. is indicated by the name itself, which, according to Blackstone, is derived from *loom*, a limb or member, and signifies a limb of the inheritance. Deer in a park, fish in a pond, doves in a dove-cot, accompany heritable lands, and, similarly, crown jewels are said to be Hs. Charters' court-rolls (evidences of title), and deeds, chests in which muniments of title are contained, also passed as Hs., and also things affixed to the freehold in such a way that they cannot be severed without damage, e.g. chimney-pieces, benches, etc. Monuments or tombstones in a church, and coat-armour, pennons, and other insignia of honour of the ancestor, although hung up in a church, formerly passed as Hs. to his heir. Hs. could not be devised by will away from the heir, but under the Settled Land Acts, the court might sanction the sale (or purchase) of Hs.

**Heist-op-den-Berg**, tn. in Belgium, 17 m. S.E. of Antwerp, with a Gothic church dating from the fourteenth century. Pop. 10,700.

**Hejaz**, The ('The Boundary'), country of Arabia, making, with Nejd (or Najd) and Asir, the Kingdom of Saudi Arabia (*q.v.*) and see also SA'UD ABU'L AZIZ (ibn.). The H. extends along the E. coast of the Red Sea, from the gulf of Akaba to the S. of Taif, and is bounded by Syria on the N., the Nejd Desert and Nejd on the E., and on the S. by Asir. Its



length is 750 m., and its greatest width 200 m. Its coastline on the Red Sea is 800 m. and its area is about 112,500 sq. m. The pop. is unknown, but is variously computed at 1,500,000 to as much as 3,000,000. It is stony and altogether desolate in character. The Tehama range traverses it, of which the chief summits are Jebel Shar (7000 ft.) and Jebel Radhwa (6000 ft.). The form of gov. of the Kingdom of Saudi Arabia is patriarchal, being in this respect in marked contrast to that of Iraq (*q.v.*), which, under the Brit. mandate, became assimilated to W. models. The local or Sharian law is administered by local cadis under chief shaiikhs resident at Riyadh (in the Nejd) and Mecca. The chief tns. of the Hejaz are Mecca (pop. about 80,000), Jiddah, the pilgrims' port (pop. about 30,000), and Medina ('the city'), the terminus of the Hejaz railway, and famous as the burial place of Mahomet, with a pop. of about 20,000 (see MEDINA). The chief products of the H. are dates, hides, fruit, honey, wool and ghi (clarified butter). Jiddah does a fair trade in hides, coffee, mother-of-pearl and carpets, but the products are mainly for domestic consumption, and the revenue is derived, apart from that drawn from dates, chiefly from the famous if declining pilgrimages. In 1939 the number of pilgrims to Mecca was nearly 600,000. Medina is connected with Amman in Transjordan, and is 800 m. by rail from Damascus. The H. railway connects with the Bagdad railway at Aleppo (*q.v.*). The Palestine railway authorities administer the section from Maan to Amman. There are no roads, properly so called, in the H. From Jiddah to Mecca (45 m.) a road through the hills is in some parts metalled. There is also a track from Mecca E. through Riyadh to Uqair on the Persian Gulf a distance of 820 m., which is used for motor transport; and a similar route connects Jiddah with Medina via Rabigh. Small ports on the Arabian coast are El Wih, Yanbo-el-Bahr, Rabigh and Jiddah (or Jedda), which contains the reputed 'tomb of Eve, mother of mankind.' The oasis of Khathir, E. of the railway, has a large pop. consisting of the descendants of former negro slaves, with a centre at Kaer el Yahudi. Abdul Aziz ibn Saud, Sultan of Nejd, having thrown off the Turkish yoke before the First World War, completed the conquest of the H. in 1926, the kingdom of the Hejaz and Nejd becoming then the most powerful in Arabia. The unification of Ibn Saud's dominions under their joint name of Saudi Arabia was effected by a decree of Sept. 22, 1932. For the hist. of the H. (and Nejd) in the First World War, see ARABIA.

**Hejira**, and after Hejira, or Hegira ('flight,' from Arabic *hajara*, to go away). signifies the flight of Mohammed from Mecca on Sept. 13, A.D. 622. Since the institution of the new Moslem calendar by Caliph Omar (640), the Mohammedan era has dated from this event, being distinguished by the letter A.H. (*anno hegire*). The Mohammedan year is a lunar one, and

therefore nearly eleven days shorter than ours. See T. P. Hughes, *Dictionary of Islam*, 1895.

**Hekla**, or Hecla, volcanic mt. in Iceland, 68 m. E. of Reykjavik. Elevation 5108 ft. There have been twentythree eruptions since the ninth century, the last in 1947. By the outbreak of 1845, fine lava ashes and dust were scattered as far as the Orkney Is. 500 m. away. The next eruption of March 29, 1947, was preceded by an earthquake and showered dust on Copenhagen, 1,250 m. away.

**Hel**, or Hela, in Scandinavian mythology, was the daughter of Loki and of the giantess Angvortha. She was the goddess of the dead, and lived below the roots of the sacred ash Yggdrasil. She ruled over the nine worlds of Helheim, the abode of the dead, and of the old and sick. After the introduction of Christianity, her dwelling-place became synonymous with hell, the abode of the wicked dead.

**Helbou**, see ALEPPO.

**Helder**, Den, seaport at the N. extremity of Holland, situated on the Marsdiep at the entrance of the Zuider Zee. There is an excellent harbour at Nieuw Diep, the E. side of the tn., and there are fine embankments. The great Helder Dyke, constructed of Norwegian granite, is 5 m. long and there is a good road along the top of it. It is an important naval and military station. H. has also an observatory, lighthouse, zoological station, and tn. hall, etc. It was first fortified by Napoleon in 1811. The Dutch fleet, under De Ruyter and van Tromp, defeated the Eng. off the coast in 1673. H. may be said to have marked the Dutch or N. end of the constant blockade which Allied naval forces maintained without interruption throughout the Second World War from the Biscay and Channel coasts, from the Gironde to Den Helder. Pop. 31,500.

**Helen**, or Helena, heroine of the Trojan War and the most beautiful of women. She was the daughter of Zeus and Leda, and the sister of Castor and Pollux. She was carried off by Theseus to Attica, but was rescued by her twin brothers. She chose Menelaus out of many suitors, but subsequently deserted her husband and fled with Paris to Troy. This led to the Trojan war, which lasted for ten years. After the death of Paris she married his brother Deiphobus, whom she later betrayed to the Greeks, and returned with Menelaus to Sparta. According to one tradition, on the death of her husband she married Achilles and lived with him in Leuce.

**Helena**: (1) Co. seat of Phillips co., Arkansas, U.S.A., situated on the Mississippi at the foot of Crowley's Ridge, 50 m. S.W. of Memphis, Tennessee. It is served by three railways and is a port of entry and the head of navigation for ocean steamers. It has a busy trade in cotton-seed products and lumber. Pop. 8500. (2) Co. seat of Lewis and Clarke co., Montana, U.S.A., situated at an elevation of 4000 ft. on the Rocky Mts., 50 m. N. W. of Butte. It is the seat of Montana Wesleyan College and of the

Rom. Catholic institutions of St. Aloysius and St. Vincent, and others. It is a large commercial centre, with lumber and quartz mills. There are gold, silver and iron mines in the dist. Pop. 15,000.

**Helena, St. (Flavia Julia Helena)** (c. 247–c. 327), wife of Constantius Chlorus, and the mother of Constantine the Great. She is supposed to have discovered the holy rood and sepulchre of our Lord at Jerusalem (326). Her festival is celebrated on Aug. 18. Sev. other saints of the Catholic Church have this name, among them being Olga, wife of grand-duke Igor, who changed her name to II. at her baptism (955).

**Helena** (d. A.D. 359), daughter of Constantine the Great and of Fausta. She married her cousin Julian, whom her brother Constantius II. made Cæsar at Milan (315). Her only son was supposed to have been killed at birth through the instigation of the Empress Eusebia.

**Helensburgh**, police burgh and holiday resort on the firth of Clyde, Scotland, in the co. of Dumbarton, at the mouth of the Gareloch, opposite Greenock. It is 23½ m. N.W. of Glasgow and 71 m. W. of Edinburgh by rail. It is a well laid out modern tn. and a centre for excursions. It is famous as the bp. of steam navigation in Europe. The jetty from which Henry Bell, the owner of the famous *Comet*, made his early experiments can still be seen opposite his house, now a hotel. St. Bride's School for girls was founded in 1895. Pop. 9900.

**Helenus**, soothsayer of Gk. legend, the son of Priam and Hecuba. He foretold the fall of Troy to the enemy, and after the siege saved the life of Pyrrhus by warning him not to return home by sea. He accompanied Pyrrhus to Epirus, over part of which he ruled, and Pyrrhus gave him Andromache, the widow of Hector.

**Helford River**, Cornwall, rises 4 m. W. of Penryn and flows into the English Channel between Rosemullion Head and Nare Point. Frenchman's Creek is a famous beauty spot on the S. side of the riv.

**Heligoland**, see **HELIGOLAND**.

**Heliland**, The (O.E. *Helend*, Saviour), ninth-century old Saxon poem of the life of Christ. The best texts are the Cotton MS. in the Brit. Museum, and the Munich MS., which are printed side by side in Siever's ed., 1877. From internal evidence modern scholars have concluded that it was written by the author of the fragments of a version of the story of Genesis which, with the H., is all that survives of Old Saxon poetic literature.

**Helianthus**, see **JERUSALEM ARTICHOKE** and **SUNFLOWER**.

**Helicon**, mt. range in Boeotia, Greece, situated between the gulf of Corinth and Lake Copais. It is celebrated in classical literature as the abode of the Muses; near by were the fountains, Aganippe and Hippocrene, which were said to give poet inspiration. The W. summit, Pæleovoun, rises to 5000 ft.; the E. summit is called Zagora.

**Helicopter**. Type of aeroplane in which the machine is equipped with one

or more lifting propellers which, power-driven, rotate horizontally. The autogiro (q.v.) differs from the H. in that its horizontal blades rotate freely. The first H. appeared in 1872. In 1923 Raoul de Pescara successfully flew one of his own invention. The advantage sought in the H. is that of being able to rise almost vertically—but the most modern 'fighter' planes can now do so. The principle of the H. is partly adopted in the gyroplane, an appliance that not only has the four rotating planes set at angles to gain an upward movement, but is also equipped with a screw that drives the whole machine against the air, thus gaining some of the advantages of the aeroplane method. Hs. were introduced experimentally in 1948 for the collection and delivery of mails by the Brit. Post Office and in 1949 for the transport of goods and building materials to places inaccessible by road. Research has been devoted recently to the application of jet propulsion to Hs., where the lifting rotor is driven by ram jets mounted at the blade tips.

**Heligoland**, or **Helgoland**, an is. of Germany, in the N. Sea, lying 40 m. N.W. of the mouth of the Elbe, and 28 m. from the nearest point on the mainland. It was once a Brit. possession (1807–90), and was ceded to Germany (1890) in return for concessions in E. Africa, being formally incorporated in the Prussian prov. of Schleswig-Holstein in 1892. The is. is a m. long, its greatest breadth being less than a third of a m. It is a rocky plateau, with a sand bank, the Düsen-Insel, off the E. coast. On three sides the is. rises nearly perpendicularly from the sea, forming a grass-covered triangle called the Oberland. It is a popular bathing resort. In accordance with the treaty of Versailles (1919) the fortifications, military estab. and part of the naval harbour were, or were supposed to have been, razed. But the 12-inch guns of the Schröder Battery came out of the old battle cruiser *Derfflinger*, which was also supposed to have been demolished with her armament. It provided one typical instance of the cursory way in which the disarmament of Germany was conducted after the First World War. Many of the tunnels were bricked up across the entrances by the Gers. and faced with carefully selected blocks of red sandstone of the cliffs, so that they were well camouflaged. When the Disarmament Commission inspected it, they saw only the tunnels which had been there before 1914. Afterwards the tunnels were opened up, being filled with secret equipment which was hidden from the Allies. Hitler re fortified it, intensively. Near the landing place is a monument erected in 1914 to those who were killed in the airship L.L.1, and in torpedo boats near the coast. Area 130 ac. Bombed by the R.A.F. in a successful daylight attack on both the naval base and the fortifications on May 14, 1941, the defences being taken by surprise. The Brit. White Ensign was hoisted in May (1945) over what remained of the great Ger. secret rock fortress of H. The whole of the armament

of the fortress had by then been destroyed, and only the enormous labyrinth of underground workings remained. There were in 1945 more than 8 m. of tunnels; the lowest, lined with Eng. brick, was constructed when it was a Brit. colony. All the Ger.-built tunnels were lined with concrete, the most modern being made in 1940 by 25,000 conscripted labourers. The U-boat pens were often hit by bombs but only chipped. The power-station was protected by a great concrete bunker under the cliff. During a big raid just before the Ger. surrender the old tn. on the Oberland and the residential quarter on the flat land below were obliterated. The only structure on the Oberland to remain intact was the control tower of the great fort. The fortifications of it were blown up by the R.N. on April 15 (1947) with 6700 tons of explosives which were detonated in the underground chambers and passages. One of the primary objects of this operation was the destruction of the U-boat pens, elaborate structures of reinforced concrete in the inner harbour. This task was completely achieved. Also the labyrinthine tunnels and caves—8½ m. in all—which the Gers. used for storage and defence were most adequately shattered; as also were the batteries of heavy guns and the power installations. The physical aspect of the Is. was changed a little by the explosion: its S. tip was flattened and the cliffs, 180 ft. high, were no longer there.

**Heligoland Bight, Battle of.** Heligoland Bight is that area of sea about the Is. of Heligoland off the N.W. coast of Germany. The W. end of the Kiel canal enters the mouth of the R. Elbe, which empties into the Bight. The area was therefore one of great Ger. naval activity during the First World War. Immediately war had been declared, Brit. submarines kept a perpetual watch upon Ger. shipping here, venturing far into the protected area and noting the routine of the various units of the fleet. It was therefore arranged to make a sweep of the Bight in the early hours of Aug. 28, 1914, by the light cruiser force at Harwich under the command of Commodore Sir Reginald Tyrwhitt. The Bight was defended by three lines of warships. Before dawn on the appointed day Tyrwhitt's force was approaching its objective, and immediately it was sighted by the Ger. ships they scuttled back to the shelter of Heligoland at top speed, without trying conclusions with their opponents. The day was misty, and this favoured them. The *Arcturion* and *Fearless* distinguished themselves on the Brit. side. One Ger. destroyer which failed to regain Heligoland was sunk. After this first brush the Ger. cruisers began to come out and look for their opponents. The Ger. *Mann* put up a good fight before she was sunk. She had become detached and could get no support. Adm. Beatty with his battle cruiser squadron now entered the battle, and immediately the Ger. cruisers turned to run to safety, but they were too late, and the *Ariadne* was sunk, and a little later the *Köln* met the same fate.

This Brit. victory was a severe blow to the Ger. Navy, although it did not come as a surprise to those in authority, who were convinced that their forces could not hold their own against the Brit. They therefore decided not to risk a battle again but to reduce the Brit. fleet by submarine and mine action. (See also DOGGER BANK.)

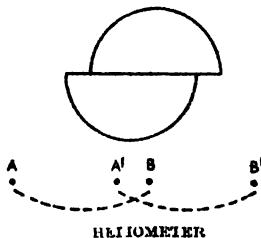
**Heliogorus of Emesa** in Syria, the earliest of Gk. romance writers. He is known by his *Æthiopica*, the MS. of which was discovered in 1526 in the library of Matthias Corvinus, and was printed in 1531. It is in ten books, and narrates the story of the lovers Theagenes and Chariclea. Consult G. A. Hirschig, *Scriptores Koptici*, 1856, and an Eng. trans. in Bohn's Classical Library.

**Heliogabalus**, see ELAGABALUS.

**Heliograph**, instrument used for signalling swiftly between two distant points, by means of flashing the sun's rays from the face of a mirror. The flashes are made to follow each other in accordance with a pre-arranged signal code. The mirror, from which a part of the mercury back has been removed, is mounted on a tripod and two sights are provided in front with a screen. The sun ray is then directed through both sights, and the flash can be seen at a distance of many miles, the range of the H. flash depending upon the size of the mirror. If the mirror is directed at exactly the required spot, its flashes cannot be read at a distance of more than 10 yds. on either side if the distance away is 1 m., or for more than 50 yds. at a distance of 2 m.

**Heliogravure**, see PHOTOGRAPHY.

**Heliometer**, astronomical instrument for measuring the diameters of celestial bodies or their distances from one another. It was invented by Fraunhofer in 1814 and, as its name indicates, was first used



to obtain solar measurements. The H. is an equatorially mounted telescope with its object-glass divided into two movable halves (as shown in diagram). The largest H. is an 8½ in. at the Vienna Observatory (Kuffner). Directions for use are thus given in the manual *Astronomy* by Sir E. W. Dyson, F.R.S. 'If,' he says, 'two stars are looked at, and the glass is turned so that the direction in which the halves are separated is parallel to the line joining the stars, there will be seen, as in the diagram, four images in a straight line, viz. A and B, the images of the two

stars formed by one half of the glass, and  $A^1 B^1$ , the images formed by the other half. The halves of the glass are separated by a distance  $AA^1$  or  $BB^1$ . If they are now still further separated till  $A^1$  coincides exactly with  $B$ , the distance between the stars is exactly equal to the amount by which the two halves of the glass are separated.

**Heliopolis** (the city of the sun): (1) anct. city of Lower Egypt, called in the Bible On. It stood 5 m. E. of the Pelusiac branch of the Nile at the apex of the Delta. It was the chief seat of the Egyptian sunworship, and was famous for its schools of philosophy and astronomy. The site of the anct. temple is marked by a red granite obelisk. A short distance from the ruins of the anct. city stands New H. It was founded in 1908 by a Belgian Co. It is in a healthy situation and is well laid out with broad streets and squares. It has churches, mosques, a sporting club and swimming bath, a racing course and club. There is a fine aerodrome. A railway is projected from New H. to Suez. Pop. 23,000. (2) The Gk. name for Baalbek (q.v.).

**Helios**, Gk. god of the sun, known to the Romans as Sol. He was the son of Hyperion and Thea and the brother of Selene and Eos. In Homer (*Odyssey*, viii.) he is described as a god who rises from Oceanus in the E. traverses the heavens, seeing and hearing everything on his way, and descends to Oceanus in the W. Later writers tell of a magnificent palace in the E. from which he comes forth in a fiery chariot drawn by four horses, and of another palace in the W. His horses grazed on the Is. of the Blessed. The Is. of Thrinacia was sacred to him; there his daughters Phæusa and Lampeta tended his flocks. He was worshipped throughout Greece and in the Is. of Rhodes, where the mighty Colossus was erected to him.

**Heliostat**, see SIDEROSTAT.

**Heliotherapy**, see SUNLIGHT TREATMENT.

**Heliotrope**, see BLOODSTONE.

**Heliotrope** and **Turnsole** are popular names applied to several species of *Heliotropium* (q.v.). The H. plant most commonly cultivated in Britain is *H. Peruvianum*. Winter H. is a common name of *Petasites fragrans*, a sweet-smelling species of Compositæ.

**Heliotropism**. The direction of the rays of light affects the position of plant members, and it is these phenomena which are termed H. Stems and leaves grow towards the source of light, as may commonly be seen in window plants, and are said to be positively heliotropic, and members, such as roots, which grow away from the light, are said to be negatively heliotropic. Young growing parts of plants respond more quickly to light than older parts.

**Heliotropium**, genus of boraginaceous plants, contains numerous species which inhabit tropical lands and are often cultivated because of their fragrant blossoms. *H. Peruvianum*, the Peruvian heliotrope, turnsole, or cherry-pie, is a shrub growing

1 or 2 ft. high, and the scent of the flower greatly resembles that of the vanilla; it is a native of Peru. *H. villosum* is found in Greece, and *H. Europæum* in S. Europe and the Caucasus.

**Heliotype**. Process connected with photography and printing. In the development of a negative, the effect of light and shade are obtained by burning away the gelatine in places, and thus causing a relief effect. By using this fact and printing from a suitable form of press, prints can be obtained from the actual gelatine surface, without covering it with tin-foil as is done in the case of Stannotype.

**Heliozoa**, name given to a group of Protozoa commonly called the sun-animalcules. Some have no skeleton, and in some cases they have a gelatinous membrane. Chlamydomorphs, which have always a gelatinous envelope; Chalarothoraca, which have a skeleton of silicious spicules; and Desmothoraca, which have a stalked or unstalked shell with numerous pores. H. are widely distributed, and are both freshwater and marine.

**Helium** (from Gk. ἥλιος, the sun), an inactive gaseous element. Lockyer observed in 1868 a bright yellow line in the spectrum of the solar chromosphere close to but not identical in position with D. line of sodium. He ascribed it to a hypothetical element *helium*. Hillebrand had noticed that an inert gas was evolved when the mineral cleveite was treated with acid. Ramsay, repeating these experiments, found that the inert gas refused to combine with oxygen, and on submitting it to Sir William Crookes for spectroscopic examination the spectrum was found to be characterised by a bright yellow line coinciding with the new line discovered by Lockyer in the solar spectrum. The name *helium* was, therefore, adopted for the new gas. It is abundant in many minerals, all of which contain uranium and barium as important constituents. The richest known mineral source is thorianite, which is mainly thorium oxide, and contains about 9.5 c.c. per grain. H. is also present in the gases which escape from the water of hot springs and in the atmosphere, of which it constitutes four parts in a million. To prepare H. from thorianite, the mineral is treated with urtic acid, when the H. is liberated together with hydrogen, oxides of carbon, and a trace of nitrogen. The hydrogen is removed by sparking the mixture with oxygen, and the remaining impurities are removed by Dewar's method of absorption with charcoal cooled in liquid air. The H. alone is unabsorbed by the charcoal, and it can be pumped off in a state of perfect purity. The prin. source of H. is the natural gas (mostly consisting of methane) issuing from petroleum wells in certain of the United States and in Canada (Medicine Hat).

**Properties**.—It is chemically inert. Its density is 1.98, referred to hydrogen as 1. The ratio of its specific heats is 1.66, so that its molecules are monatomic. The atomic weight is, therefore, double the density, i.e. almost 4. Its solubility in

water is less than that of any known gas. It approximates more closely to the ideal gas than hydrogen. In 1908 Kamerlingh Onnes of Leyden University succeeded in liquefying it. Its boiling point is  $4.3^{\circ}$  abs., the density of the liquid is  $.154$ , and its critical temp. is  $5^{\circ}$  abs. Solid H. was obtained by Kelsom in 1926. Its melting-point is only one degree above abs. zero. The  $\alpha$ -particle expelled by radium, thorium, uranium, and actinium is identical with the atom of H. This conclusion is based on the following experimental evidence: (1) All  $\alpha$ -particles have the same mass and differ only in their velocity of expulsion. This mass has been measured, and has been found to be the same as the mass of the H. atom: (2) The 'emanation' from radium which expels  $\alpha$ -particles (radon) was stored in a thin-walled but perfectly gas-tight glass tube, enclosed within a wider vessel. After some days the gas in the outer vessel was found to contain H. It was proved that when H. was stored in the inner tube, none passed through the glass into the outer vessel. In this experiment the velocity of expulsion of the  $\alpha$ -particle was so great that the particle could not get through thin glass. When it was brought to comparative rest in the space surrounding the thin glass vessel, its properties were identical with those of the atom of H. There is a general accumulation of evidence that one atom of a radio active substance expels but one  $\alpha$ -particle at each disintegration. Hence the change from radium to H. may be expressed quantitatively thus:

$$226 = 222 + 4 \\ \text{Radium} = \text{Radon} + \text{Helium}.$$

The numbers denote the atomic weights.

The atomic number of H. is 2. Its atom is next to that of hydrogen in simplicity of structure, its nucleus consisting of 4 protons and 2 electrons; the revolving or orbital electrons are thus two in number.

H. had at one time considerable commercial importance as a gas for filling airships. It has not quite so much lifting power as hydrogen, but possesses the inestimable advantage of being completely non-inflammable. For commercial purposes H. is obtained from natural gas that issues from the earth in Kansas and other districts of the N. Amer. continent (see above). The gas after purification is liquefied as far as is necessary to condense all the constituents except H.; it is then drawn off and stored. Millions of cubic feet of H. can thus be obtained per annum at a very reasonable cost.

H. is the lowest member of the group of 'rare,' 'noble' or 'inert' gases, of which other star members are neon, argon, krypton, xenon and radon.

Helix, the snail, typical genus of Helicidae, and contains sev. thousand species; *H. hortensis* is the common European snail, and *H. pomatia*, also found in England, is called the Rom. snail.

Hell, popularly conceived of as the place in which the finally impenitent suffer eternal torment, is in the A.V. the

Eng. rendering of sev. Heb. and Gk. words with distinct connotations. Hence very considerable confusion has arisen. The various words represented thus are the Heb. Sheol, and the Gk. words Hades (*hades*), Tartarus (*tartaros*), and Gehenna (*gehenna*). It will be well first to trace slightly the development of the Heb. conception of Sheol, trans. also in the A.V. sometimes as 'grave' and three times as 'pit.' The earlier view is well represented in passages of the Psalms xxvi. and lxxxviii., from which we see that Sheol is conceived of as a region outside the jurisdiction of Yahweh, and as independent of His existence. Sometimes the dead are here regarded as cognisant of earthly affairs, sometimes as totally ignorant of them. According to the former of these views, which is also the earlier, the dead retain their self-consciousness, and the state of affairs in Sheol is a shadowy reproduction of the earthly life. According to the later view, which is fully elucidated in the Book of Job (especially chaps. vii., xiv., and xxvi.), Sheol is equivalent to utter destruction. It is the land of sleep, of utter forgetfulness, and silence. The dead are ignorant of what passes on earth, and are unable to affect its affairs. The same view is put forth in Eccles. ix., where vv. 5 and 10 insist on the fact that all knowledge has forsaken the dead. Considerable development of eschatological conceptions is seen, however, in the post-exilic writings, and the doctrine of the resurrection comes into prominence, partly as a result of Persian influence. Two passages, in particular, are of importance as containing a clear enunciation of this doctrine, viz. Isa. xxvi. 1-19, and Dan. xii. By the second century B.C. the general conception of the abodes of the departed had taken a more clearly defined form, and Gehenna is the name given to the final abode of the wicked, where they suffer endless torments by fire, while Sheol is an intermediate state for both righteous and wicked, divided into four parts, two for the wicked, two for the righteous. The Sadducees, however, still sustained the ant. denial of a resurrection. In the N.T., Hades is used for the place of departed spirits, Gehenna for that of endless (*aiwnios*) punishment for the wicked. Tartarus occurs once (2 Pet. ii. 4) as the abode of the fallen angels. There has been much controversy as to whether the Gk. adjective *aiwnios* is equivalent to eternal in the modern sense of the term, that is to say, never-ending. The noun *aiwn* is frequently used for a long 'period of time,' and from the time of Origen onward, there have been those who held the opinion that ultimately the punishment of the most wicked and even of the devils would have an end, and that thus all would be saved. This is not, however, the common conception of the Early or Medieval Church, for here we find phrases which contain no ambiguity. Eternal punishment is never-ending. This view, found in the works of St. Thomas Aquinas, is also to be seen in the writings of Protestant divines. The pains of H. are conjectured to be both physical and

spiritual, the latter consisting chiefly of the torments of despair and remorse. The difficulties of the doctrine, based as it is on the actual word of Christ, are great and terrific, and have never been felt more keenly than in the modern age. With it is involved theologically the doctrine of the freedom of the will; only a deliberate and utter rejection of God can separate a soul from Him; therefore no-one can attempt to form an estimate of the fate of others, since apparent wrong-doing may be due to want of deliberation or to ignorance.

**Hell**, tn. in the prov. of Sor Trondelag, Norway. It is situated on the Trondhjem Fjord, 20 m. from Trondheim and on the direct railway from Sundsvall to Oslo.

**Hellah**, see HILLAH.

**Hellanicus**, or **Lesbos** (c. 495-411 B.C.), early Gk. historian, b. at Mitylene in Lesbos. The works attributed to him are: *The Priestess of Hera at Argos*; *Athis*; *Carneotike*, etc., in all about thirty chronological and historical works. Consult G. W. Müller, *Fragmenta historicorum*, 1841-72; and J. B. Bury, *Ancient Greek Historians*, 1909.

**Hellas**, dist. of S. Thessaly, often identified with Phthiotis. The Gks., who called themselves Ἑλληνες (Hellenes), after their mythical founder Ἑλλας (Hellen), son of Deucalion and Pyrrha, came to use H. to denote all the lands on which they settled, but more particularly the mainland of the Peloponnese.

**Hellbender**, see MENOPOME.

**Hell**, Die, valley in the Swartberg (Black Mts.) of Cape Prov., S. Africa inhabited by a farming community of 90 people, descendants of Huguenots who fled from France after the revocation of the edict of Nantes in 1685. The towering rock wall of the Swartberg shuts them off from the world and they have no radio, no newspapers, no telephones and because of the lack of roads they are beyond the reach of any wheeled vehicle.

**Helle** in Gk. myth, the maiden who gave her name to the Hellespont. With Phrixus, her brother, she fled on the golden-fleeced ram to escape the persecution of her step-dame, Ino, and fell into the strait, now called the Hellespont, and was drowned.

**Hellebore**, popular name of species of the ranunculaceous genus *Helleborus*, found only in Europe. They are sometimes employed in medicine, and when used in moderation they possess stimulating properties; in large doses they act as a fatal poison. *H. viridis*, the green H., is indigenous to Britain; is herbaceous below, shrubby above, and bears pale green flowers. *H. niger*, the Christmas rose (*q.v.*) has white flowers which turn green after fertilisation. A species of Liliaceae, *Veratrum album*, is known as the white H. root.

**Hellebore**, False, see VERATRUM.

**Hellefors**, com. and tn. of Sweden in the prov. of Örebro. Pop. 5000.

**Hellen**, in Gk. legend, was the son of Deucalion and Pyrrha. He ruled over Phthiotis and gave to his subjects the name of Hellenes. His three sons, Aeolus,

Dorus, and Xuthus, gave their names to the three nations, Aeolians, Dorians, and Ionians.

**Hellenism**. The term was made popular in England by Matthew Arnold, who used it to denote the principle of classic purity in art, as opposed to Hebraism, which expresses itself as 'romantic' exuberance in art. The word is more correctly applied by Droysen to the phase of Gk. culture prevalent in the second and third centuries among certain Ἑλληνιστὰς of Alexandria, people, not Gk. by birth, who had adopted the language and customs of auct. Greece. The Hellenistic language is a peculiar form of Gk., with many Heb. and Aramaic words and idioms. See P. Wendland, *Die hellenistisch-romische Kultur in ihren Beziehungen zu Judentum und Christentum*, 1907; R. Cohen, *La Grèce et l'hellenisation du monde antique*, 1939; M. Rostovtzev, *The Social and Economic History of the Hellenistic World*, 1941.

**Hellenist** (from the Gk. ἑλληνιστῶν, to imitate the Gks.), a term applied to a person who adopts the manners and customs of auct. Greece. It was first applied, during the first and second centuries, to the Jews of Alexandria, who laid aside the language and customs of the Hebs. for all the usages of the Gks. See also HELLENISM.

**Heller**, Stephen (1815-88), Austrian musical composer, b. at Pest. At the age of nine he made some sensation as a boy pianist. He studied in Paris, and became one of the set of which Chopin, Liszt, and Hallé were prominent members. He wrote entirely for the pianoforte and still retains his popularity with amateur players. H. visited England in 1849 and 1862. See life by H. Barbodette, 1876.

**Helles**, Cape, at the S. end of Gallipoli, near the entrance to the Dardanelles. Here Anzac troops were first landed at the beginning of the Gallipoli campaign in the First World War (see GALLIOLI CAMPAIGN).

**Hellespont**, see DARDANELLES.

**Hell Fire Club**, see under MEDMENHAM.

**Hell Gate**, or **Hurl Gate**, narrows formed by L. in the E. It., New York, U.S.A. near the junction with the Harlem R. and the bend towards Long Island Sound, where at certain states of the tide there is a whirl of currents. John Newton (1823-95) was the engineer, who, at the instance of the Federal Gov., conducted the blasting operations in 1885, which removed the dangerous rocks and deepened the Channel. H. G. Bridge is a fine new structure which crosses the strait in a single span and has made possible the direct rail service from Boston to Washington, etc.

**Hellin**, tn. of Spain in Albacete, situated near the R. Mundo in a rich wine- and oil-yielding country. There are sulphur mines and warm sulphurous springs, which were known to the Romans. Pop. 14,000.

**Hellovo**, see OTHRYA.

**Helmand**, or **Helmand**, see HELMUND.

**Helmbrechts**, tn. of Germany in Bavaria, 20 m. N.E. of Bayreuth. Pop. 6000.

**Helmet**, protective covering for the head. At the time of the Norman Conquest a conical H. with nose-piece was worn with or without safeguards for the ears and nape of the neck. The casque was usually made of strong hide, strengthened with small iron plates. In the eleventh century a mail-hood was attached to the casque. A century or so later it became of heavy iron was frequently worn over a light basinet. The knights of the fourteenth century wore long pointed visors, that could be moved up and down, while the chain mail was worn low over



ROMAN HELMET

the shoulders. They bore their crests high on their Hs. The *salade* or *sallet* of the next century had a low, rounded crown and a long neck-guard. Other variations of the H. are the *armet*, *burgonet*, *morion*, and *cabasset*. Firemen of all countries, and the policemen of some, wear Hs. The soldiers of all modern armies are equipped with steel Hs. See J. Hewitt, *Ancient Armour and Weapons in Europe*, 1860; G. F. A. Laking, *Record of European Armour and Arms through Seven Centuries*, 1920-22; H. Norris, *Costume and Fashion* (in course of pub.).

**Helmet-shell**, name given to members of the genus *Cassia*, gastropod molluscs belonging to the family Cassididae, found in tropical seas and the Mediterranean. They resemble whelks in appearance, having thick heavy shells with prominent edges; some species attain considerable size, and, as they are composed of differently coloured layers, they are much used in the manu. of cameos. *C. madagascarensis* is the largest of these, and *C. rufa* and *C. cornuta* are also commonly used.

**Helmholtz**, Hermann Ludvig Ferdinand von (1821-94), Ger. philosopher and man

of science, b. at Potsdam, near Berlin. His father was a teacher of philology and philosophy in the gymnasium; his mother, a Hanoverian lady, a lineal descendant of the great Quaker, William Penn. H. was delicate in early life and became a student by habit; he soon showed mathematical powers. In later years his attention was directed to higher mathematics by force of circumstances. He could not afford a purely scientific career, so he became surgeon in the Prussian army. In 1842 he wrote a thesis, in which he announced the discovery of nerve cells in ganglia; this was his first work, and from 1842 to 1894, the year of his death, scarcely a year passed without sev. important papers on scientific subjects from his pen. In 1849 he became prof. of Physiology in Königsberg; and subsequently in Bonn and Heidelberg. In 1871 he became prof. of Physics in Berlin, and in 1887 nominated head of the Charlottenburg Institute. His pub. works include *Sensations of Tone as a Physiological Basis for the Theory of Music* (1873). See J. C. McKendrick, *Helmholtz*, 1899.

**Helmond**, tn. of N. Brabant, Netherlands; on the Zuid Willems Canal, 23 m. N.W. of Venlo. It has manu. of textiles, etc. Pop. 26,000.

**Helmont**, Johann Baptist van (1577-1641), Belgian chemist, b. at Brussels; educated at Louvain, where he became prof. of surgery. For some years he devoted himself to the study of mysticism, but was turned to chemistry and natural philosophy by the works of Paracelsus. He spent some years in France, Switzerland, and England, but in 1609 settled near Vilvorde and devoted himself to chemical investigations. He made a special study of 'gases,' and estab. the present scientific sense of the word 'gas,' and investigated the chem. properties of the fluids of the human body. His chief work, *Ortus Medicinæ*, was pub. by his son in 1618.

**Helmstedt**, tn. of Brunswick, Germany. 24 m. S.E. of Brunswick. It is noted for manu. of machinery, pottery, woollens, etc., and near it are valuable mineral springs. It grew up in the ninth century round the monastery of St. Ludger, and from 1575 to 1809 was famous for its univ. founded by Duke Julius. H. gained importance after the Second World War as the 'frontier' station on the railway line to Berlin, connecting the W. and E. zones of occupation. Pop. 17,600.

**Helmund**, Helmand, or Helمند, riv. of Afghanistan, rising in the Koh-i-Baba chain, S. of the Hindu Kush, and flowing S.W., W. and N.W. into the lake of Hamun, Seistan, or Savaran, near the Persian frontier, after a course of 680 m. Numerous tribs. flow into it from S. Afghanistan. In its lower reaches it is wide and deep, but dries up at certain seasons. The water-power is largely used for mills.

**Helm Wind**, wind which, under certain conditions, blows over the escarpment of the Pennines, near Cross Fell, from the eastward, when a helm (helmet) cloud covers the summit. The helm bar is a

roll of cloud that forms in front of it to leeward.

**Héloïse**, see **ABÉLARD**

**Helots** (ὅλοι αἰχμαῖοι or αἰχμαῖοι), serfs of the anc. Spartans. The word was derived in antiquity from the tn of Helos in Laconia, but is more probably connected with ἄλος, a fen, or with the root of αἰών, to capture. Some scholars suppose them to be of the Achaean race, but they were more probably the aborigines of Laconia, who had been enslaved by the Achaeans before the Dorian conquest. After the second Messenian war the conquered Messenians were reduced to the status of H., from which Epaminondas liberated them three centuries later after the battle of Leuctra (371 B.C.). The H. were state slaves to the soil and assigned to individual Spartiates to till their holdings. Their masters could neither emancipate them nor sell them off the land, and they were under an oath not to raise the rent payable yearly in kind by the H. In time of war they served as light armed troops or as rowers in the fleet. From the Peloponnesian war onwards, they were employed as heavy infantry, and distinguished bravery was rewarded by emancipation.

**Helpmakaar**, tn of Klip R. dist., Natal, S. Africa, 80 m N of Pietermaritzburg. Formerly a Brit. military post, it had some importance during the Zulu war (1879) and the Boer war (1900-02). Pop. 26,000.

**Helps**, Sir Arthur (1813-71), Eng. essayist and historian, and clerk to the Privy Council, b. at Streatham Surrey. He was the son of a London merchant, and was educated at Eton and Trinity College, Cambridge. After leaving the univ. he was private secretary to various public men, and, in 1841, his circumstances rendering him independent of employment, he retired to Bishop's Waltham, and devoted himself for twenty years to study and writing. Appointed in 1860 Clerk to the Privy Council, he became a favorite of Queen Victoria who entrusted him with the task of editing the *Speeches and Addresses of the Prince Consort* (1862) and her own *Leaves from the Journal of our Life in the Highlands* (1869). The first of his own publs. was *Thoughts in the Winter and the Road* (1835). A series of apologetics, and then came *Lessons written in the Interests of Business* (1841), *Friends in Council* (4 series, 1847-51) and *Conversations on War and General Culture* (1871). As a member of the Conversations Society he was associated with such men as Alfred Tennyson, Arthur Hallam and Monckton Milnes. In hist. he wrote *The Conquerors of the New World* (1818-52) and *The Spanish Conquests in America* (4 vols., 1811-61), a useful work collating the records of many early and other foreign historians. Also wrote *The Life and Labours of Mr. Thomas Brassey 1807-1870* (1872) and biographies of Bartolomé de las Casas, Columbus, Pizarro, and Cortés, derived largely from the foregoing works. His essays were, however, his most successful work, containing the thoughts of a shrewd and experienced man written in what Ruskin called 'beautiful quiet English.' They

have not, however, any exceptional depth or originality. See E. A. Helps (ed.) *Correspondence*, 1917.

**Helpmann, Robert Murray** (b. 1909), Brit. danseur and actor, son of James Murray II, of S. Australia. Educated at Prince Alfred's College, Adelaide. First appearance 1926-30 under J. C. Williamson's Management, Australia. Premier danseur, Sadler's Wells Ballet from 1933. Played Oberon in *A Midsummer's Night Dream* (1937-38), Gremio in *Laming of the Shrew* (1939), Hamlet in Old Vic production, New Theatre (1944), Klamuko in *The White Devil* and Prince in *He Who Gets Slapped*, Duches, Theatre (1947). Appeared in the film *One of our Aircraft is Missing*, as the bishop of Ily in the film *Henry V* (1911) and Wyecroft in *Cavalier* (1946). Choreographer and premier danseur in *Red Shoes*, choreographer of *Comus*, *Hamlet*, *The Birds*, and *Corroboree*.

**Helsingborg**, fortified seaport of Sweden, situated on the Sound, opposite Elsinore, 32 m N.W. of Malmö. It has a good harbour, a fishing industry, and manufs. of sugar, chemicals, and machinery. It figured largely in the Scandinavian wars, being almost destroyed in the reign of Charles XI. The Danes were defeated here in 1710. Pop. 59,000.

**Helsingør**, or **Elsinore**, seaport of Denmark, situated on the is. of Zealand, in the prov. of Frederiksborg, and on the E. coast at the narrowest part of the Sound, 27 m N. of Copenhagen and exactly opposite to Helsingborg in Sweden. To the N.E. is the fortress of Kronborg (1580). The harbour, enlarged in 1843-84, has 18-20 ft. of water and is much used by ships for coaling and repairing. There is a patent slip and large shipbuilding yards, while good anchorage is afforded by the roadstead outside. The Sound dues were collected here till 1957. It is the bp of Saxo Grammaticus' and the scene of Shakespeare's *Hamlet*. Pop. 18,900.

**Helsinki** (**Helsingfors**), seaport and cap. of Finland and prov. Nyland. Centre of the administrative, scientific, educational and industrial life of Finland. The fine harbour is divided into two parts by a promontory and is protected at its entrance by a group of small is., upon one of which stands the fortress of Sveaborg. A third harbour is situated on the W. side of the promontory and all three have granite quays. The city, which in 1810 had only 100 inhabs., Åbo, the then cap. having 10,421, has increased with great rapidity, having 22,000 inhabs. in 1860, 62,000 in 1890, 170,000 in 1910, 216,000 in 1920, 293,000 in 1930, and 338,800 in 1951. It is the centre of an active shipping trade with the Baltic ports and with L. Land, and of a railway system connecting it with all parts. It possesses wide streets, parks, gardens, and monuments. The pub. square contains the cathedral of St. Nicholas, the senate house, and the univ., all striking buildings of considerable architectural distinction. The univ. which was founded in 1640 at Turku (Åbo), was removed to H. after



having been burned down in 1827. It had (1917) over 9000 students (3700 women). The language of culture is Swedish. The manufs. of the city consist largely of tobacco, beer, spirits, carpets, machinery, and sugar. It was savagely bombed by Russian planes in the Russo-Finnish war of 1939-40. See also FINLAND, *History*.

**Heist, Bartholomæus van der** (1613-70), Dutch painter. Probably b. at Haarlem, and said to have been a pupil of Frans Hals. He also studied under Nicolaes Elias of Amsterdam. He was living in Amsterdam in 1636, and in 1654 was joint founder, with Nicolaes de Helt Stokade, of the Painters' Guild of St. Luke. His best work is in portraiture, and includes 'Muster of the Burgher Guard' (1648), in Amsterdam Museum, which is his finest production and contains twenty-four full-length portraits: 'A Protestant Dame' (1639), at 'The Hague'; 'The Company of Captain Rogloft Bicker' (1639), and 'The Syndics of the Brotherhood of Saint Sebastian' (1663), both in Amsterdam Museum.

**Helston, mrkt. tn.** of Cornwall, England, 10 m. S.W. of Falmouth. Noted for the 'Curry' or 'Flora' Dance, held annually on May 8. It was made a bor. by John in 1201: from the reign of Edward I. to 1832, returned two members to Parliament, and c. 1843. Pop. 5000.

**Helvellyn, mt.** in the lake dist., Cumberland, England, between Thirlmere and Ullawater. It is one of the highest peaks in England (3198 ft.), and is fairly easy of ascent, while magnificent views may be obtained from the summit. Famous steep approaches from the E. side are the Striding and Swirell Edges. See LAKE DISTRICT.

**Helvetia, Swiss colony and tn.** in Santa Fé prov., Gran Chaco, Argentine Republic, 50 m. N.E. of Santa Fé, founded in 1856. Pop. 2500.

**Helvetic Republic, system of gov.,** consequent upon the occupation of Switzerland by the Fr. imposed by them in 1798, and abolished to allow of the re-organisation of the old cantonal system by Napoleon in 1803.

**Helvetii, ant.** Celtic nation, which, according to Caesar, inhabited a region roughly corresponding to the W. part of modern Switzerland. Their chief tn. was Aventicum. They first appear in hist. as allies of the Cimbri during their invasion of Italy, but are best known in connection with their invasion of S. Gaul in 58 B.C., when they were repulsed by Caesar with great slaughter. They were again defeated by Cavinus, a general of Vitellius, after the death of Nero. See E. Howard and E. Meyer, *Die römische Schweiz*, 1940.

**Helvétius, Claude Adrien** (1715-71), Fr. philosopher and *littérateur*, descended from a family of physicians whose original name was Schweitzer (Latinised as Helvétius). His grandfather introduced the use of ipecacuanha. His father was first physician to Queen Marie Leszinska of France. Claude Adrien was trained for a financial career, but occupied his spare

time writing verses. At the age of twenty-three, at the queen's request, he was appointed farmer-general, a post of responsibility and dignity, worth 100,000 crowns a year. This provided for, he proceeded to enjoy life to the uttermost. As soon as he had saved enough from his position as farmer-general, he retired to an estate in the country, and employed his large means for the relief of the poor. *De l'esprit* appeared in 1758, and this both attracted attention and roused formidable opposition for the 'pernicious doctrines' in its philosophy. The author wrote three retractations, yet he had to give up his office at court, and the book was publicly burned by the hangman. Madame du Defand said that he had written openly what everyone thought secretly. His philosophy belongs to the Utilitarian school. The keynote of his thoughts was that public ethics has a utilitarian basis, and he insisted on the importance of culture in national development. His *De l'homme* and *Le Bonheur* were posthumously pub. in 1775. See D. G. Mostros, *Die Padagogik des Helvetius*, 1891, and study by A. Klein, 1907.

**Helwan, tn.** of Egypt, near R. Nile, 10 m. S.E. of Cairo, noted on account of its warm sulphur springs. Before the First World War the pop. was about 8000, but since then it has increased greatly.

**Hemaka, Tomb of, see under SAKKARA.**

**Hemans, Felicia Dorothea** (1793-1835), Eng. poetess, b. in Liverpool, the daughter of George Browne. She was a precocious child, and was encouraged in her taste for poetry. She pub. a vol. of verse as early as 1808, and another entitled *The Domestic Affections* (1812). In this year she married Capt. H., an Irish officer who had served in Spain. In 1818 they separated, after the birth of five sons, Capt. H. settling in Italy, and Mrs. H. living in N. Wales, Lancashire, and Dublin. Her work is not strong, but graceful and pleasing. She suffered from a fatal facility, but some of her pathetic and sentimental poems became very popular. A complete ed. of her works was pub. posthumously in 1839. They include: *Records of Woman* (1825), *The Forest Sanctuary* (1826), *Songs of the Affections* (1830). See H. F. Chorley, *Memorials of Mrs Hemans*, 1836.

**Hematin, or Hæmatin, pigment radicle** which, together with globin, constitutes the colouring matter of the blood. It has the formula  $C_{12}H_8N_2O_4FeOH$ , and to some extent is related to chlorophyll, the green colouring matter of plants.

**Hematite, see HÆMATITE.**

**Hemel Hempstead, mrkt. tn.** of Hertfordshire, England, 23 m. N.W. of London. It is a centre of the straw-plaiting industry, and also has boat-making, paper-making, iron-working, tanning, and brewing industries. A Rom. villa has been discovered at Boxmoor close by. There are fine public buildings, and it has lately developed as a satellite tn. Pop. 11,300.

**Hemelingen, vil.** of Hanover, Germany, 3 m. S.E. of Bremen, with a cigar-making industry. Pop. 10,000.

**Hemerocallis, see DAY LILY.**

**Hemianopia**, peculiar and rare form of disease of the eye, usually due to disease within the brain, causing sight to be limited to one half of an object.

**Hemlerania**, see **HEADACHE**, and **MIGRAINE**.

**Hemidesmus**, see **SARSAPARILLA**.

**Hemilkeem**, industrial tn. in Belgium, 6 m. S.S.W. of Antwerp, on the Scheldt. Chief manufs. are copper, lime, and cement. It has brick-works and breweries. Pop. 9200.

**Heming** (or **Hemminge**), John (d. 1630), Eng. actor. He is known to have been one of the chief proprietors of the Globe Theatre during the reign of Elizabeth, and is connected with Shakespeare in sev. ways. He is said to have created the part of Falstaff, and also played in sev. of Ben Jonson's dramas. With Henry Condell (d. 1627), he was a co-editor of the first folio of Shakespeare, issued in 1623.

**Hemingford** (or **Hemingburgh**), Walter (d. 1347), Eng. chronicler. He was subprior of St. Mary's, Gisborough, Yorkshire, and died there. His chronicle extends from 1066 to 1346, and was pub. by Gale in his *Veteres Scriptores*, and by Hearne (Oxford, 1731), and fully ed. in 1843-49 by H. C. Hamilton.

**Hemingway**, Ernest, b at Oak Park, Illinois, 1898. Educated in the public schools of his native state, he worked as a day-labourer, farm hand, and newspaper reporter. Went to France before America entered the 1914-18 war, as a volunteer in an Amer. ambulance unit. Later enlisted in It. Arditi and was severely wounded. He made his debut as author in 1923, and then attracted wide attention with his vol. *The Sun Also Rises* (1926), this was followed by *Men Without Women* (1927). It was, however, in 1929 that he definitely estab. his reputation as one of the strongest of the newer generation of Amer. authors by his novel *A Farewell to Arms* (1929), a story dealing with the adventures and love affair of an Amer. in an ambulance corps serving with the It. army. Since then he has been widely read in America, and, under his influence especially, a whole school of 'tough' novelists has grown up, where none has equalled his best work. Despite his increasing tendency to establish some connection between his stories and political or social conditions, there persists in them a certain suggestion of the love of violence for its own sake, which limits their appeal still further than it has already been limited by the endeavour to sustain indefinitely an interest in simple declarative sentences describing the action of unreflective characters. His *For Whom the Bell Tolls* (1940) was inspired by his experiences in the Sp. Civil war.

**Hemiplegia**, paralysis of one side of the body. It is the most usual form of paralysis, and affects the leg, the arm, and also the muscles of the mouth and tongue. If the paralysis be on the right side, aphasia (q.v.), often accompanies H. Complete recovery is possible but not very frequent. Slight numbness, and not complete paralysis, of sensation, accompanies H., although if the fibres carrying sensory

impulses to the surface of the brain are destroyed, there may be loss of sensation on the affected side. In certain cases there may be paralysis on the side opposite to the affected limbs. See **PARALYSIS**.

**Hemiptera**, name given to a large order of insects which includes the bugs, plant-lice, scab-insects, etc., and is also called **Rhynchotha**. All individuals belonging to this order are characterised by a mouth consisting of a proboscis or jointed beak, which is concealed by being bent back under the thorax; wings, with rare exceptions, four in number, and the anterior pair more horny than the posterior pair. All H. are sucking insects, and the mouth of the individual, like that of Orthoptera, does not change during its lifetime, but they differ from all other orders of insects in respect of the structure of the mouth. The order is divided into **Heteroptera**, whose wings, partly horny and partly membranous, fold flat on the back; and **Homoptera**, whose wings cover the body in a rooflike manner. The Anopliura, or Lice, are sometimes included in this group, or may be regarded as a separate order. See B. F. Cummings, *The Bed-Bug*, 1917; E. A. Butler, *Biology of British Hemiptera-Heteroptera*, 1923; J. Davidson, *List of British Aphides*, 1925; W. L. Macatee and J. R. Malloch, *Revision of the American Bugs*, 1925; J. G. Myers, *Insect Singers: Natural History of Cicadas*, 1929.

**Hemling**, Hans, see **MEMLING**.

**Hemlock**, name given to sev. plants of different characteristics. Two of these are umbelliferous species and occur in Britain. *Cicuta virosa*, the water H. or cowbane, is one well-known plant, and *Conium maculatum*, the common H., is another; both contain a deadly poison. The latter has a mouselike snell, and is well known as the plant from which the poison drunk by Socrates was obtained. The H. spruce is an evergreen coniferous tree found in N. America, and bears the botanical name of *Tsuga Canadensis*. It is a valuable plant on account of its bark, which is employed in tanning, the pitch it yields, and its strong timber.

**Hemmingsen**, Niels (1513-1600), Dan. theologian, b. in Laaland; educated under Melancthon at Wittenberg, becoming prof. of Gk. there in 1543 and of dialectics in 1544. In 1578 he returned to Denmark and became minister of the church of the Holy Ghost at Copenhagen, and professor of Heb. in Copenhagen Univ., which he made famous for its Protestantism. In 1577 he became prof. of divinity there, and in 1579 a canon in the church of Roskilde. He assisted in the first trans. of the Bible into Dan.

**Hemorrhage**, see **HEMORRHAGE**, and **BLEEDING**.

**Hemp**, plant of the genus *Cannabis*, natural order **Urticaceae**, of which *C. sativa* is the only known species. It is an annual and is found wild in W. and Central Asia, Brazil, and tropical Africa, and is cultivated in Asia, America and many parts of Europe. The H. plant is not unlike the hop family (to which it is botanically allied) in appearance, with

erect stalk, growing from three to sixteen ft. high according to climate, square in shape, like the common stinging-nettle, five to seven-fingered leaves of lanceolate-acuminate form with serrated margins, and is discolorous. The seed is a valuable product, being used as bird-food, and, when crushed, as oil for soap and oilcake.



The *H.* plant secretes a resinous substance possessing narcotic and intoxicating qualities (see *HASHISH*), while Indian *H.* or *Bhang* has proved of value as a hypnotic in therapeutics. *H.* is, however, most valued for its fibre, which is obtained by burying the stems in mud and leaving them to rot for seven days, when they are taken out and beaten in the water and all the woody matter is removed, a treatment similar to that of flax (*q.v.*). The latest (pre-1940) world statistics give a total production of 750,000 tons (Philippines or Manila, 230,000; China (probably), 150,000; Russia, 140,000; Italy, 100,000). *Manilla Hemp*, from the fibre of the long leaves of a species of banana tree, is an important industry in the Philippines, about 183,500 tons being produced annually. *Stiel H.* from the *Agave sisalana* growing wild in Yucatan, Mexico, cultivated in Brit. and Portuguese W. Africa and Dutch W. Indies, is greatly used in the U.S.A. for making ropes and binder twine. *Sunn H.*, or brown *H.*, from the bark of *Crotalaria juncea*, is not as strong as true *H.*, but resists water better. *New Zealand H.* is a growing industry. See also FIBRE AND FIBRE SUBSTANCES. See S. S. Boyce, *Cannabis Sativa, a practical treatise on the culture of Hemp for seed and fibre*, 1900; H. R. Carter, *Modern Flax, Hemp, and Jute Spinning and Twisting*, 1925.

**Hempstead**, vil. and summer resort of Nassau co., New York, in Hempstead township on the Long Is. R., 20 m. E. of Brooklyn. It was settled by New Englanders in 1643. Pop. 13,000.

**Hems, Hums, Homs, or Khoms** (Lat. *Emesa*), city of Syria, near E. Orontes, 63 m. N.E. of Tripoli, cap. of the Sanjak of

H. The modern city, built of black basalt, is mean, dirty, and crowded, and is surrounded by half-ruined walls. The only anct. relics are columns, inscriptions, foundations, and fragments of pavements. There is considerable trade in silk, cotton, oil, gold ware, and sesame. In anct. times, as *Emesa*, it was famous for its Temple of the Sun, of which Heliogabalus, emperor of Rome in 218, was a priest. In 272 the Emperor Aurelian defeated Zenobia here. It was taken by the Saracens in 636, and by the Crusaders in 1098. Ibrahim Pasha defeated the Turks here in 1832. A railway was opened in 1925 from H. to Tripoli, 64 m. Pop. 100,100.

**Hemsterhuis, Tiberius** (1685-1766), Dutch philologist, b. and educated at Groningen. In 1704 he became prof. of mathematics and philosophy at Amsterdam; in 1720 professor of Gk. at Franeker, and in 1740 prof. of Gk. hist. at Leyden. He created a new school of Gk. philology, which includes among its representatives Kuhnken and Valckenær. He issued famous eds. of works by Pollux, Lucian, and Aristophanes. His son Franz (1721-1790) was a noted philosopher.

**Hemsworth**, vil. of W. Riding of Yorkshire, England, 6½ m. N.E. of Barnsley. Pop. 12,300.

**Hemy, Charles Napier** (1841-1917), Eng. marine painter, b. at Newcastle-on-Tyne; son of Henri F. Hemy, distinguished musician. Educated in art at Newcastle and Antwerp. He made sev. voyages as a boy, and at one time joined the Dominicans at Lyons; but finally settled in England in 1870, living in London till 1881, when he removed to Churchfield, Falmouth. He became a member of the R.W.S. in 1897; A.R.A., 1898; R.A., 1910. His works include: 'Homeward', 'Oporto', 'Silent Adieu', 'Pilgrims', 'Lost' (1897), 'Smugglers', (1899), 'Home Wind', 'Birds of Prey' (1901), 'The Crew' (1902), 'Youth' (1903), 'The Lifeboat', 'Haul Aft', 'London River', 'The Crab Merchant' (1904), 'Bound for London' (1907), 'Plymouth', 'Through Sea and Air' (1910), 'Home at Last' (1913), 'The Black Flag' (1915).

**Hen**, see POULTRY.

**Henault, Charles Jean François** (1685-1770), Fr. historian. His father was a former-general of taxes, and a man of literary tastes. The son was educated at a Jesuit college. In his fifteenth year he entered the Oratory, with the view of becoming a preacher. His literary talent obtained him entrance to the Academy. The literary work upon which he bestowed his chief attention was the *Abrégé chronologique de l'histoire de France*, first pub. in 1744 without the author's name. In the compass of two vols. he comprised the whole hist. of France from the earliest times to the death of Louis XIV. This work was a prodigious success, and was trans. into sev. languages, even into Chinese.

**Henbane**, or *Hyoscyamus niger*, species of *Solanaceae* found in Britain. It is an herbaceous plant with large leaves and whitish-yellow flowers which are followed

by an erect capsule dehiscing by means of its lid. The fl. has an extremely disagreeable odour, hence its name, but in medicine it is sometimes used as a narcotic and sedative.



Henderson, cap. city of Henderson co., Kentucky, U.S.A., on R. Ohio, 10 m. S. of Evansville. The chief industry is the preparation of tobacco. There are coal mines in the dist. Pop. 13,100.

Henderson, Alexander (1583-1646), Scottish ecclesiastic, b. in Crichton, Wiltshire. Graduated at St. Andrews in 1603, and in 1610 was appointed prof. of rhetoric and philosophy and tutor of the faculty of arts. Shortly after this he was presented to the living of Leuchers. As he was forced upon his par. by Archbishop George Gladstones, and was known to sympathise with episcopacy, his settlement was at first unpopular, but he changed his views and became a Presbyterian in doctrine and in church gov., and one of the most esteemed ministers in Scotland. H. is one of the greatest of men in the hist. of Scotland, and next to Knox is certainly the most famous Scottish divine. He was once called a 'Cabinet minister without office.' The existing Presbyterian churches of Scotland are indebted to him for the forms of their dogmas and their eccles. organisation. He is justly considered the second founder of the reformed church of Scotland.

Henderson, Arthur (1863-1935), Brit. Labour politician; b. in Glasgow. Educated at St. Mary's School, Glasgow. Served apprenticeship as moulder at Robert Stephenson & Co.'s works at Newcastle-on-Tyne. He became M.P. for Barnard Castle in 1903, and so remained until the general election of 1918. He was chairman of the Parl. Labour Party, 1908-1910; and on the coming of the First World War, when J. Ramsay MacDonald had to stand aside because of his pacifism, H. was again chosen chairman; and he so remained until 1917. P.C., 1915. He was: President of the Board of Education, 1916-16; Paymaster-general and

labour adviser to Gov., 1918; member of war-committee of Cabinet, 1918-17. Gov. emissary to Russia, 1917. He resigned from the Coalition Gov. because of Lloyd George's banning of the Stockholm Labour Conference in the last-mentioned year. Early in 1924, having been returned for Burnley, he joined the first Labour Gov. as Home Secretary. In the Labour Gov. formed June 1929 he became foreign secretary, in which office he was responsible for the Anglo-Egyptian Treaty (signed after his death, in 1936) under which the Brit. Military occupation was terminated. In 1932 he presided over the Geneva disarmament conference, and received the Nobel Peace Prize in 1931. Sec. E. A. Jenkins, *From Foundry to Foreign Office. The Romantic Life of the 1st. Hon. Arthur Henderson*, 1933.

Henderson, John (c. 1747-85), Eng. actor, b. in London. He made his debut at Bath in 1772 as Hamlet, and came to be known as 'Bath Roscius.' In 1777 he appeared at the Haymarket, London; in 1778-79 with Sheridan at Drury Lane; and after 1779 at Covent Garden. He was a friend of Mrs. Siddons and Gainsborough. He was successful in many Shakespearean rôles.

Henderson, Sir Neville Meyrick (1882-1912), Brit. diplomat, educated at Eton. Attaché in diplomatic service, 1905. Secretary, at successive periods, at St. Petersburg, Tokyo, St. Petersburg (second time), Rome, Nish and Paris. Counsellor, at Constantinople, 1921, and Acting High Commissioner there, 1922-21. Minister to Egypt, 1921-28; to France, 1928-29; and to Yugoslavia, 1929-35. Ambas. to Argentine and Minister to Paraguay, 1935-37. Ambas. to Germany, 1937 until 1939 (Sept.). It thus fell to his lot to hold the most important diplomatic post in the service at a time when the Brit. Gov.'s appeasement policy was in full operation; and when at length the measure of Hitler's sinister intentions was apparent it was too late. (See on this the article WORLD WAR, SECOND.—CARPIS.) He wrote *Failure of a Mission* (1910) and *The Water under the Bridges* (autobiography, pub. in 1945).

Henderson, Sir William Hannam (1846-1931), Eng. adm., b. at Worth, Sandwich, June 20. Commanded the *Conquest* (1889-92), and served under Sir Edmund Fremantle in the punitive expedition against the sultan of Vitu, E. Africa, 1890. Commodore and senior officer in Jamaica during the Cuban War. In 1902 promoted to flag rank and appointed adm.-superintendent at Devonport; full adm., 1904. He will be remembered as a reformer of naval education, who saw the value of systematic instruction in strategy and tactics. H. derived his appreciation of the importance of this subject from Sir E. B. Hamley, *Operation of War* (1867), and he received much encouragement in his efforts from Prince Louis of Battenberg.

Hending, Proverbs of, series of Middle Eng. verses, contained in the Harl. MS. 2253 (Brit. Mus.), consisting of six-lined stanzas, rhymed a b a b, each of which

closes with an old folk proverb, many of which are still in common use. The proverbs seem to have been collected from older thirteenth-century material.

Hendon, bor. of Middlesex, England, on R. Brent, 8 m. N.W. of St. Paul's London. A favourite residential suburb of London, and is also a popular holiday resort, the 'Welsh Harp' reservoir of Regent's Canal being much used for skating, fishing, etc. Until recently it was an important aviation centre with aeroplane works and flying schools. Mill Hill, just to the N., has a large Nonconformist Grammar School (1807), and a Rom. Catholic Missionary College (1871). The Metropolitan Police College was opened at H. in 1934. Golders Green and Hampstead Garden Suburb are within the bor. Pop. 128,500.

Hendrick, Burton Jesse (1871-1949), Amer. historical writer and biographer, b. at New Haven, Conn., U.S.A., and educated at Yale. He began as a journalist on the *New Evening Post* and then joined the staff of *McClure's Magazine*; from 1913-27 he was an associate editor of *The World's Work*. His first book was *The Age of Big Business*, the title of which perhaps affords an indication of his major interest as a student of Amer. hist. He was awarded the Pulitzer Prize for his part in *The Victory at Sea* (1920), written in collaboration with Adm. Win. S. Sims (q.v.). But he will be chiefly remembered in this country, firstly, for his *Life and Letters of Walter H. Paus*, a full and attractive portrait of a great ambas. and a great man; and for his *Life of Andrew Carnegie* (1933). *The Life and Letters*, which was pub. in 3 vols. between 1922-25, is remarkable for the wealth and historical importance of the material prepared by H. In 1933 was pub. another vol., on *The Earlier Life and Letters*, which fully maintains the interest of its predecessors. The first instalment of his work earned him a Pulitzer Prize for the second time. For *The Training of an American* (1928) he received yet a third Pulitzer Prize. His *Life of Carnegie*, his best piece of biography proper, is an illuminating study both of character and of a tremendous age of industrial expansion. His later books include two on the great issues of the Civil War: *Statesmen of the Lost Cause* (1939) and *Lincoln's War Cabinet* (1947), showing with shrewd irony opposite sides of the great struggle.

Hendricks, Thomas Andrews (1819-85), Amer. political leader, vice-president of U.S.A. in 1885, b. near Zanesville, Ohio. Graduated at Hanover College, Indiana, and in 1843 began a successful career at the Bar. From 1868 till his death he was put forward for nomination for the presidency at every democratic convention, save that of 1872. He had been U.S. Senator from Indiana from 1863 to 1869 and governor of the state, 1873-77. In 1884 he ran for vice-president when Grover Cleveland was his party's presidential nominee and this time was successful. He died shortly after assuming office and this gave rise to the passing by Congress of the law which provides that in

case of the death of both president and vice-president, the line of succession shall run through the Cabinet in the following order—secretaries of state, treasury, war, attorney-general, secretaries of the navy and interior.

Heneguen or Sinal Hemp, see FIBRE AND FIBROUS SUBSTANCES.

Hengelo, tn. of Overijssel, Holland, 5 m. N.W. of Enschede, an industrial centre. There is a large cotton industry, also dyeing, brewing, and railway engineering. Pop. 45,500.

Hengist and Horsa, brother chieftains who led the first Saxon bands which settled in England. They were apparently called in by the Brit. king, Vortigern, to defend him against the Picts. The place of their landing is said to be Ebbsfleet in Kent. The settlers of Kent are described by Bede as Jutes, and there are traces in Kentish custom of differences from the other A.-S. kingdoms. H. and H. were at first given the Isle of Thanet as a home, but soon quarrelled with their Brit. allies, and gradually possessed themselves of what became the kingdom of Kent. In 455 there was a battle between the two brothers and Vortigern, and Horsa was slain. Thenceforward Hengist reigned in Kent together with his son.

Henin-Litard, tn. of Pas-de-Calais, France, 7 m. N.W. of Douai, with a coal-mining industry. Pop. (comm.) 22,500.

Henle, Frederick Gustav Jakob (1809-1885), Ger. pathologist and anatomist, b. in Franconia. His famous *Manual of Rational Pathology* (1846-52), marked a new era in pathological study. From 1852 to 1873 he was pub. his great *Handbook of Systematic Human Anatomy*.

Henlein, Konrad (189-1915), Sudeten-Ger. politician, b. at Maffersdorf, Reichenberg. Was once a bank clerk. Began a Ger. gymnastic movement in Bohemia soon after the First World War. Took a leading part in organising the Sudeten Ger. party in Czechoslovakia and in 1936 he succeeded the extremist trade union leader Kaspar as head of the party. With support from the Nazis in Germany he abandoned the rôle of constitutional loyalist seeking the redress of minority grievances and demanded first autonomy for the Sudetenland and later the complete transfer of that ter. to the Ger. Reich. After the *anuschluss* his followers were absorbed into the Nazi party and when Czechoslovakia was occupied by the Gers., H. was appointed chief of the civil administration in the Protectorate. (See CZECHOSLOVAKIA.) Later he became Civil Commissioner for Bohemia. He committed suicide in an allied-prisoner-of-war camp cage by slashing his wrists with a razor blade which he had concealed under adhesive tape in his cigarette case (May 10, 1945).

Henley, John (1692-1756), 'Orator Henley', b. at Melton Mowbray, educated at Cambridge; became a teacher, and took holy orders, having charges in Melton Mowbray, London, and Chelmsford, Suffolk. In 1726 he left the church and estab. in London his famous 'Oratory'. Here he preached primitive Christianity

on Sundays, and taught 'universal knowledge' on Wednesdays, attracting large numbers by the strangeness of his methods and doctrines. In 1730 he became a pensioner of Walpole and editor of the *High Doctor*. He wrote *Æther* in 1714.

Henley, William Ernest (1849-1903), Brit. poet, critic, and editor, b. at Gloucester, and educated at Crypt Grammar School in that city. T. E. Brown, the poet, was headmaster there for some time. His appointment was a stroke of luck for H., to whom his coming meant the lad's first introduction to a man of genius. To the end, H. was no classical scholar, but his knowledge of and love for literature were vital. At the age of twenty-five his health failed, he was sent to a hospital in Edinburgh, and from there he sent poems, describing his experience in the ward, to Leslie Stephen, who was editing the *Cornhill*. The poems were full of poignant force, and Stephen visited his contributor in hospital, in company with Robert Louis Stevenson. The meeting between H. and Stevenson, and the friendship which arose between them, form one of the best known episodes in recent literature. In 1877 H. went to London and began his editorial career by editing *London*. At the end of 1886 he came before the public as a poet. Later he ed. the *Scots Observer*, and had the knack of 'discovering' literary men. It was that paper which gave to the world Kipling's *Barrack-room Ballads* (1892). H. exercised by his originality an inspiring influence on the higher class of journalism, but his fame must rest on his poetry. As an editor, with a profound conviction in the soundness of Conservatism and imperialism, he often erred about transient tendencies and events; but his trenchant leaders of the early 'nineties on such subjects as the development of Socialism, or on India or Burma, show that he was often uncannily and prophetically right. H.'s physical sufferings have been said to be the key to his poetry; there is a feminine note in it and a perverseness in his judgment. He is at his best in fugitive or solitary poems on deeply-emotional themes, such as sunset and a quiet passing. Like the poetry of John Davidson and John Masefield, the poetry of H. is notable for clear cut actuality and subordination of beauty for its own sake to the effect of power. He followed Kipling in the swashbuckling vein, and threw himself with a strange zest into the then new fashion of belauding Colonial adventure regardless of Christian traditions. In his lyrics, however, he revealed a genuine if not always original force. His best work is his *London Voluntaries* (1893), poems unconventional but stimulating and challenging. His collected works were pub. in 1908 and 1921. See L. C. Cornford, *William Ernest Henley*, 1913. E. V. Lucas, *The Collins and their friends*, 1928; K. Williamson, *W. E. Henley: a Memoir*, 1930; J. Connell, *W. E. Henley*, 1949.

Henley-on-Thames, tn. of Oxfordshire, England, on R. Thames, 35 m. W. of London. A favourite summer resort and

noted for the ann. amateur regatta, founded in 1839. The tn. dates from Rom. times. The fine five-arch bridge was built in 1786. Malting and brewing are the chief industries. Pop. 8800.

Henna, substance made from the leaves of *Lawsomia inermis*, the Egyptian privet or henna-plant, and is much used in the E. for staining nails, finger tips, etc., and by men for dyeing their beards, the colour produced being a reddish orange. Its use has prevailed from very early times. To-day it is used by women for dyeing hair.

Hennebont, tn. of Morbihan, France; on R. Blavet, 6 m. N.E. of Lorient. Much of the tn. is very old. It is now a busy port, and has boat-building, tanning, and distilling industries. The tn. suffered considerable damage in the Second World War. Pop. 5100.

Henner, Jean Jacques (1832-1905), Fr. painter, b. at Bernwiller, educated under Drolling and Picot. In 1858 he obtained the Grand Prix de Rome. His most notable work is seen in his nude figure-studies. Among his pictures are 'The Chaste Susanna' (1865), in the Luxem. bourg, 'Biblis (changée en source' (1867), at Dijon, 'The Good Samaritan' (1871), in the Luxembourg, 'Nalades' (1875), in the Luxembourg, 'The Dead Christ' (1876), 'St John Baptist', 'The Evening' (1877), 'The Magdalene' (1878), 'The Levite I phraim' (1898), 'The Dream' (1900).



HENRIETTA MARIA

Henrietta Maria (1609-69), Queen of Charles I of England, daughter of Henry IV of France. When the first overtures were made for her hand on behalf of Charles, she was not much more than fourteen. Consent was given to the marriage on condition that the Eng. Rom. Catholics were relieved from the operation of the penal laws. She married by proxy and had already pledged her husband to a

course of action which would bring unpopularity upon him as well as upon herself. The early years of the marriage were unhappy. Charles breaking his promise to relieve the Eng. Catholics. After the assassination of Buckingham, the barrier between the married pair was broken, and the bond of affection that united them never loosened. In 1644 the queen left her husband, to see him no more, being exiled in France on account of religious and political difficulties in England. Her husband's execution in 1649 was a terrible blow to her. When, after the Restoration, she returned to England, she found there was no place for her in the new order, and in 1665 she went again to France, there to spend the remainder of her life.

**Henrietta Maria** (1644-70), daughter of Charles I. of England, and wife of the duke of Orleans, brother of Louis XIV., *b.* in Exeter. She was successful in persuading her brother, Charles II., into signing the Treaty of Dover with France. On her return to France she died suddenly, probably by poison.

**Henry**, practical unit of electric self-inductance. It was defined by the International Congress of 1908 as 'the induction in a circuit when an electromotive force induced in this circuit is one international volt, while the inducing current varies at the rate of one ampere per sec.' It derives its name from that of the discoverer of the property of inductance, Joseph Henry (1797-1878).

**Henry I.** (1068-1135), king of England, the youngest son of Wm. the Conqueror and it is to be noted the only son born to Wm. after he became king. This is of importance, since H. made this fact one of his chief claims to the throne of England against the claim of his eldest brother Robert. During the war between Rufus and Robert of Normandy, H. supported the claims of Robert, but, in the treaty which followed, his claim to the Eng. throne was utterly disregarded. On the death of Rufus, however, and whilst Robert was hastening back from the Holy Land, he seized the crown of England (1100), and was elected by the witan. The early part of his reign was taken up with struggles with Robert. These struggles ended in a compromise by which Robert was to receive an ann. pension. Robert, however, again went to war and was overwhelmed at Tonchebrai (1105). This battle has been called the Eng. revenge for Hastings. Robert remained a prisoner in the hands of H. until his death in 1133. The struggle in Normandy was continued by Robert's son, who found much support at the hands of the Fr. king. Ultimately, H. was entirely successful. He had done much to commence the amalgamation of Norman and Saxon into a united Eng. race, and although his marriage with the Saxon princess, Matilda, was scornfully regarded by the Norman nobles, it was an example which was followed later by many Normans. In England itself H. had issued a charter on the lines of the ant. charter of Edward the Confessor, and had restored law and order

in the country. Many of the wisest reforms of Henry II. (*q.v.*) had their beginning in H.'s reign. In 1119 his only son, Wm., was drowned in the wreck of the *White Ship*, and the remainder of H.'s reign was taken up in attempting to settle the succession. His daughter, Matilda, had married: (1) The Emperor Henry V., (2) Geoffrey of Anjou. Although H. compelled the barons to swear to recognise Matilda as queen on his death, the throne was ultimately obtained by Stephen. H. was a wise, just, and clever king, but he was cold, and at times brutal. See R. W. Church, *Saint Anselm*, 1870; T. Arnold's ed. of 'Henry of Huntingdon', *Historia Anglorum* (Rcls series), 1879; E. A. Freeman, *The History of the Norman Conquest* (vol. v.), 1867-79; W. Stubbs, *The Constitutional History of England* (vol. i.), 1874-78; Kate Norgate, *England under the Angevin Kings* (vol. i.), 1887; Sir J. H. Ramsay, *Foundations of England* (vol. ii.), 1898; H. W. C. Davis, *England under the Normans and Angevins*, 1905; H. Belloc, *History of England* (vol. II.), 1927.

**Henry II.** (1133-89), king of England. He was the eldest son of Matilda and Geoffrey of Anjou, and was *b.* in 1133. On the death of his grandfather, Henry I., his mother was passed over in the Eng. succession and Stephen succeeded. Before H. had attained his majority he had proved himself a great warrior, and was the possessor of wide dominions in France. He ruled Normandy, Maine, Anjou, and Touraine, whilst by his marriage to Eleanor of Aquitaine, the divorced wife of the king of France, he succeeded to her dower as well. He landed in England in 1153, and by the treaty of Wallingford it was agreed that he should succeed Stephen as king of England. He was crowned in 1154, and immediately began to establish firmly the royal power. The 'nineteen long winters' had left the nobility practically omnipotent in England, and H.'s first task was to crush the baronial power. This he did by turning the mercenaries out of the country, by demolishing all castles erected without licence, and reverting to the crown all grants of land made during Stephen's reign. Having crushed the barons' power, he turned his attention to the church. The power of the church was admittedly great, but the church was by no means inclined to give up that power. He appointed his chancellor, Becket, archbishop of Canterbury, but Becket proved as obstinate an archbishop as he had been subservient as chancellor. The Constitutions of Clarendon placed the royal and the church courts on an equal basis, but Becket ultimately refused to acknowledge them, and in defiance of them appealed to the pope and fled the country. This ultimately led, after a pretended reconciliation, to his murder (1170). In 1174 H. did public penance at the tomb of Becket.

H., however, cannot be regarded as essentially an Eng. king. The greater part of his reign was spent in France in struggles with the king of France and with his own subjects. He probably regarded

England as the least important of all his dominions. During his reign, also, attention had been turned to Ireland, where Strongbow had succeeded in establishing Norman power. H. went over to Ireland, reduced the Norman nobility to subjection to himself, and ultimately appointed his youngest son John lord of Ireland. In France, in addition to struggling against the Fr. king, he had also considerable trouble from his sons, Henry, Richard, and Geoffrey. Both Henry and Geoffrey died before their father, but the final struggle which broke H.'s power was against the king of France and Richard. H. was defeated, humiliated, and forced to agree to terms. He agreed that a general amnesty should be granted to his rebellious subjects. Weak and ill almost to death, he was presented with a list of the rebels; the first name which he saw was that of his best-loved son John, and with the words 'Shame on a conquered king' he turned his face to the wall and died. His reign in England has been described as a reign of law and order, and certainly the system estab. by H. worked exceedingly well and was of vast importance in the building of the constitution of England. He was the greatest of the Plantagenets, and it is to be noticed that in order successfully to oppose and lessen the power of church and nobility, he enlisted popular support by wise and enlightened measures of reform, and by the Assize of Arms he raised a militia on which he could always depend. He was an able gen., a wise, if unprincipled, statesman, and a great legislator. See the records of the various chroniclers, such as Wm of Newburgh's (or Newbury), *Historia Rerum Anglicarum* (Hist. of Eng. affairs). Giraldus Cambrensis (Gerald de Barri) and others (Rolls series); Stubbs's *Constitutional History*; H. W. Eyton, *Itinerary of Henry II*, 1878; Mrs. J. H. Green (Alice Stopford), *Henry II*, 1888; W. Maitland, *History of English Law*, 1898; Kate Norgate, *England under the Angevin Kings*, 1887; Sir J. H. Ramsay, *Anglo-Norman Empire*, 1903; F. Hardagen, *Imperialpolitik Heinrichs II. von England*, 1905; and the life by L. F. Salzman, 1919.

**Henry III.** (1207-72), king of England, older son of John. At the age of nine he succeeded to his father's throne, at a period when the struggle for the maintenance of the Charter was at its height. So far had the opposition to his father gone that Louis of France had been invited to accept the allegiance which many of the Eng. barons had refused to John. By the judicious measures of the regent Pembroke, of Hubert de Burgh, and Stephen Langton, H. was generally received as king and Louis was compelled to leave the country. On the death of Pembroke (1219), Hubert de Burgh ruled for H. and adopted a distinctive and national policy. In 1227, however, H. declared himself of age. In 1232 he deprived Hubert de Burgh of all his offices, and finally began the period of personal gov. in 1234. His policy was weak and vacillating, and was influenced largely by the surrender of the kingdom to

the papacy, a measure for which his father was responsible for, but of which H. suffered the results. His numerous relations, or the foreign favourites as they were generally termed, were another cause of trouble to H., and caused much ill-feeling throughout the country. His early war with France, which was fought from a mistaken conception of the ideals of the Eng., ended in disaster, and would have had even more disastrous effects had it not been for the generosity of St. Louis. His continued misrule, his attempted extortions of money, the vast influence of the papacy over the kingdom, and his numerous grants to his favourites, finally united the Eng. as a race against him. Matters came to a head when H. finally demanded a huge sum of money to purchase for his son Edmund support to obtain the kingdom of Sicily granted him by the pope. By the Provisions of Oxford his power was relegated to a committee of barons, led by Simon de Montfort, a former favourite and a brother-in-law, but now a much-hated rival. In 1263 the Provisions of Oxford were placed under the arbitration of Louis of France, who decided in favour of H., and war immediately broke out. The party of Simon de Montfort over-ruled the king at Lewes, and for a time the gov. passed into their hands. In 1265 Simon summoned his famous parliament, the forerunner of our modern representative parliaments, but in the same year he was overcome and killed at Evesham by Prince Edward. The Montfortian party held power for a time, but finally terms were laid down by the Dictum of Kenilworth. Henceforth the troubles of the reign ceased, so much so that Edward was able to depart on crusade, and H. died peacefully at Westminster. It is important to notice that so thoroughly had affairs been settled that Edward succeeded peacefully to a kingdom to which he did not return until two years after his father's death. See W. Shirley (ed.) *Collection of Royal and other Historical Letters* (Rolls series, 1862-66); W. Stubbs, *Constitutional History of England* (vol. II.), 1887; H. W. C. Davis, *England under the Normans and Angevins*, 1903; Sir J. H. Ramsay, *Dawn of the Constitution*, 1908; Kate Norgate, *Minority of Henry III*, 1912; M. Hennings, *England under Henry III*, 1924; E. Jacob, *Studies in the Period of Barons' Reform*, 1925.

**Henry IV.** (1367-1413), king of England, first of the Plantagenet house of Lancaster to ascend the throne. His accession was in reality the vital cause of the later Wars of the Roses. He was the son of John of Gaunt, the fourth son of Edward III. He was known in early life as Henry of Bolingbroke, the title being taken from the place of his birth. He supported Richard II. against Gloucester, but was being raised to the position of duke of Hereford, exiled (1398). In the next year, whilst Richard was in Ireland, Bolingbroke landed at Haveringpur and marched down through England, proclaiming that he came but to claim his own. Finally, he forced Richard, deserted



and betrayed, to abdicate, and was himself proclaimed king as Henry IV. (1399). He based his claim essentially upon its parl. character. Richard died at Pontefract four months later. His reign is characteristic chiefly for the lawlessness and rebellion which pervaded it, and for the impetus which his accession to the throne gave to parliament. The Welsh rebelled under Owen Glendower (Glyndwr); the Scots were attacked, but the attack failed, and when the Scots invaded England, they were beaten by the Percies at Homildon Hill (1402). Irritated by the king's behaviour, the Percies now rebelled, and attempted to form a junction with the Welsh under Owen Glendower: they were, however, defeated at Shrewsbury (1403). After this the power of the Welsh rebellion began to die out, but Wales can be said to have been practically independent of England's authority during the greater part of this reign. Prince James of Scotland was captured and kept a prisoner in England, and H. attempted some attacks in France. His religious policy was strongly in favour of the church, and he commenced a rigorous persecution of the Lollards. Towards the end of his reign he was a chronic invalid and suffered from a particularly painful and, according to some authorities, loathsome disease. He died at Westminster. He was a capable and clever man, but towards the end of his reign degenerated into a suspicious and cruel tyrant. See J. Gairdner, *Houses of Lancaster and York*, 1874; J. H. Wylie, *History of England under Henry IV.*, 1884-98; Sir J. H. Ramsay, *Lancaster and York*, 1892; C. W. C. Oman, *The Political History of England* (vol. iv.), 1892; J. H. Fleming, *England under the Lancastrians*, 1921.

Henry V. (1377-1422), king of England, eldest son of Henry IV., was created Prince of Wales in 1399. His youth was occupied in constant warfare, and many wild and probably exaggerated stories are told of him. That he disagreed with the policy of his father is obvious from his reversal thereof when he ascended the throne. He did all he could to popularise the Lancastrian dynasty on his accession. The Percies were restored to favour, Richard's body was interred in Westminster Abbey, but nevertheless he put down with a firm hand any attempts at rebellion. The year after his accession he claimed the throne of France by right of his great-grandfather, Edward III., and took an army across to France. Success attended his arms, and he was able to win the notable battle of Agincourt (1415) and to reduce N. France. Finally came the treaty of Troyes (1420), by which H. married the Fr. king's daughter and was acknowledged as heir to the Fr. throne. Whilst he was in England attending the coronation of his queen, the Eng. forces met with some reverses. H. thereupon returned to France, but died there in Aug. A just, pious and conscientious ruler, he was without pity, and was a great persecutor of the Lollards. See works cited under Henry IV.; also C. L. Kingsford, *Henry V.: The Typical Mediaeval Hero*,

1901; J. H. Wylie, *The Reign of Henry V.*, 1914-19; R. B. Mowat, *Henry V.*, 1920; R. A. Newhall, *English Conquest of Normandy 1416-1424*, 1924.

Henry VI. (1422-71), king of England, the only son of Henry V. and Catherine of France. He was less than twelve months old when he succeeded to the realm of England, and shortly afterwards, by the death of his grandfather Charles VI. of France, he became king of France. His tutors were administered for him by his uncles Bedford and Gloucester. At first the attempt of the Fr. dauphin (Charles VII.) to obtain possession of his father's throne was in vain, but after the appearance of the Maid of France (Jeanne d'Arc), the Eng. began gradually to lose their Fr. possessions. The death of Bedford in 1435 was really the final blow to the Eng. cause, and by 1453 Calais alone remained in Eng. hands. In 1447 Gloucester, after having been arrested by the queen's party, was found dead a few days later. The queen (Margaret of Anjou) now became the real leader of the policy of the court: her husband, pious, learned, and amiable, was entirely under her influence, and unfortunately events were moving rapidly in England towards a climax. The loss of the Fr. possessions, the return of the soldiers from France, and the resulting unemployment problem which followed, all conspired to make the Lancastrian dynasty unpopular. Nor did the influence of the queen have any better result. In 1454 H. became insane, and Richard, duke of York, a nearer lineal descendant of Edward III. than H., became protector. H. recovered; York was deprived of his office, and it became obvious that war was at hand. The year 1455 saw the battle of St. Albans, and from that date until 1471 battles between Yorkists and Lancastrians were frequent. Wakefield (1460) delivered York into the hands of Margaret, by whom he was beheaded, but Towton (1461) placed Edward, earl of March, son of Richard of York, securely on the throne. The power behind the throne was that of Richard Neville, earl of Warwick 'the King-maker,' of whom Edward, brave, clever, dissolute, and unscrupulous, now endeavoured to get rid. Finally, he drove Warwick into the hands of Margaret of Anjou; the alliance was at first successful, for Edward IV. was forced to flee the country and for a short time H. was again king. But Edward returned, Warwick was slain at the battle of Barnet (1470), and the Lancastrian line defeated at Tewkesbury (1471). The night of the return of Edward from Tewkesbury to London saw the death of H. See life by John Blakemore (or Blacmore), the king's chaplain, c. 1510, trans. 1919. See also *The Paston Letters* (Introduction by J. Gairdner), 1872; J. Gairdner, *Houses of Lancaster and York*, 1874; E. A. Gasquet, *The Religious Life of Henry VI.*, 1923.

Henry VII. (1457-1509), king of England, b. at Pembroke Castle, son of Edmund Tudor and Margaret Beaufort. He was descended from that Owen Tudor who married the widow of Henry V., Catherine of France; he was thus con-

nected with the royal line, and through his mother was descended from the Beauforts, the descendants of John of Gaunt and Catherine Swinford. He naturally supported the claims of the Lancastrians during the wars of the Roses, and finally put a period to these wars at the battle of Bosworth (1485), where he overthrew Richard III. and was acclaimed king on the battlefield. He was the founder of the Tudor dynasty, and practically estab. a system of absolute monarchy. By his marriage with Elizabeth of York he united the two houses of York and Lancaster, and by his overthrow of Simnel and Warbeck, the pretenders, he finally estab. his line firmly on the throne of England. His influence on the Continent was much greater than that of any previous Eng. king, and his adoption of a national policy gave England a great position amongst the nations of Europe. The policy of royal marriages which he initiated was of vast importance when judged by its later results. The marriage of his son Henry with Catherine of Aragon, after she had first wedded the elder son Arthur, was a primary cause of the separation from Rome, whilst the marriage of his daughter with James IV. of Scotland led to the ultimate amalgamation of the crowns of England and Scotland. He adopted a policy of peace, he estab. sound commercial relations with the Continent, and he realised that whilst the nobility must be crushed, the people must be supported. This peace policy had wide effects upon the later hist. of England. When H. died he left a huge fortune (about £30,000,000) to his son Henry VIII. He was an austere, somewhat miserly king, but nevertheless a king who placed England on a securer and firmer basis than heretofore. See J. R. Lumby (ed.), *Francis Bacon's Life of Henry VII.*; also J. Gairdner, *Henry the Seventh*, 1889; W. Busch, *England under the Tudors* (vol. 1, *King Henry VII.*) (trans.) 1895; A. F. Pollard, *The Reign of Henry VII. from contemporary sources*, 1913-14; Gladys Temperley, *Henry VII.*, 1914; W. D. Bushell, *The Lady Margaret Beaufort and Henry VII.*, 1916; C. H. Williams, *Henry VII.*, 1937.

**Henry VIII.** (1491-1547), King of England, being the second son of Henry VII. and Elizabeth of York. Until the death of his elder brother Arthur he was educated for the church. He succeeded his father and married Arthur's widow, Catherine of Aragon, in 1509. This marriage seems to have caused H. no scruples at the time. When he succeeded he was one of the most popular kings that England had ever had. He was young, handsome, tall, well built of a jovial disposition, and free and easy with his subjects. No king ever had better prospects when he ascended the throne. His reign falls naturally into two parts, separated by the date 1528, which may be regarded as the critical year of the divorce. The early period was occupied in affairs at home, in promoting the commercial relations of the country, and in maintaining the balance of power in Europe. In all this he was

ably supported by Cardinal Wolsey, but it must be remembered that H. was always the leading spirit. The aims of the king, of the cardinal, and of the nation conspired at this time to make the foreign policy popular and national. A life-long rivalry had begun between Francis I. of France and Charles V. of Spain. Wolsey profited from their mutual hostility by making England the arbiter between them, and both kings sought the favour of H., Francis at the Field of the Cloth of Gold, and Charles in a less ostentatious manner,



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in Kent. In 1525, however, Francis was defeated at Pavia. By 1524 H. had grown tired of his wife, he pretended to have scruples as to the legality of the marriage. He had already through Wolsey, incurred the displeasure of parliament by his increasing demands for money, now he finally determined upon the step which was to alienate Rome, to separate the Churches, and in reality, though probably unconsciously, to complete the subjugation of the powers of the country to the crown. Yet previously, from his dislike of Protestantism, he had been prepared for peace with Rome, but on his own terms; and his defence of the Papacy against Luther, in 1521, had won him the historic title 'defender of the faith.' By 1528 the matter had advanced to an absolute demand for a divorce. From the point of view of H. there were many reasons for this step. He wanted an heir to the throne—so far Mary alone of his children had survived; he desired to marry Anne Boleyn, and he alleged that his marriage had been without the sanction of God. For a time Pope Clement VII. was inclined to concede the demand, and in 1528 Cardinal Campeggio was sent to England, with ample powers.

The trial ended without decision, and the immediate result was the recall of Camppeggio and the overthrow of Wolsey. H.'s failure had, however, only increased the keenness of his desire. Since the papacy would not honour him, he would obtain a divorce in his own courts, and in his own way. In 1531 the recalcitrant clergy were outlawed, and, step by step, and, by means of what is somewhat incorrectly termed the Reformation Parliament, he proceeded until he was acknowledged as head of the church, and the power of the bishop of Rome was declared at an end. But the way had been paved with blood, and Bishop Fisher and Sir Thomas More had paid the penalty of loyalty to principle. It must be definitely understood, however, that H. wished to be strictly orthodox. His idea was not the reformation of a religion, but of a religious system; his motives may have been bad, but they were of vast importance to the nation at large. The Lutherans were far from encouraged, the Whip with Six Thongs (The Six Acts) imposed orthodoxy of the strictest type. The persecutions of Cromwell and the subservience of Cranmer made the path of H. fairly smooth. The monasteries, the most influential centres of allegiance to the papacy, were abolished (1536-39), their lands confiscated and granted to a new nobility. The pilgrimage of Grace was crushed with merciless severity; the king became absolutely supreme. H. had, by this time married Anne Boleyn and executed her, by her he had the Princess Elizabeth. His next wife, Jane Seymour, bore him Prince Edward and died. Anne of Cleves followed; H. was displeased with her, and the marriage was immediately dissolved; the immediate result was the execution of Cromwell. H. next married Catherine Howard, who was executed for infidelity, and finally Catherine Parr, who nursed him and managed to survive him. During the latter part of the reign the Reformed religion had made some progress with little or no encouragement from H. The later years of the reign were, however, marked by cruelties and bloodshed beyond measure, and H. died finally with the reputation of a bloody tyrant. The facts of Henry VIII.'s life are to be found in the *Letters and Papers of the Reign of Henry VIII.* 21 vols. ed. by S. J. Brewer and J. Gairdner, 1910. See also J. Froude, *History of England*, 1856-69; M. Chelington, *Wolsey*, 1888; F. A. Gasquet, *Dissolution of the English Monasteries* (trans.) 1889; A. F. Pollard, *Henry VIII.*, 1905; and M. Hume, *History of Henry VIII.*, 1905; C. Constant, *La Réforme en Angleterre*, 1930; H. Savago (ed.), *The Love Letters of Henry VIII.*, 1949.

**Henry I.** (c. 1010-60), King of France, in 1031, son of King Robert and grandson of Hugh Capet. The early years of his reign were spent in fighting the feudal nobles, who supported the claims of his younger brother Robert. When this dispute was settled he turned his attention to Normandy, where he attacked Wm. the Bastard without success. His son was

crowned the year before his death, and this was very necessary since H. was simply a feudal magnate and regarded only as *primus inter pares*.

**Henry II.** (1519-59), King of France, in 1533 married Catherine de' Medici. He succeeded his father, Francis I. The influence of the family of Guise led to the interference of France in Scotland, and to war with England. This war resulted in the capture of Calais, which had for over two centuries been in the possession of England. This reign witnessed much



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oppression of the Protestants, but nevertheless H. supported the reformers against the emperor with some degree of success, but was overthrown in the Sp. Netherlands by Alva. The treaty of Cateau-Cambrésis concluded the war with the empire and Spain. He was slain at a tournament by a Scottish nobleman. See H. de la Barre-Duparcq, *Histoire de Henri II.*, 1887; L. Romier, *Les Origines politiques des guerres de religion*, 1913-14, and *Le Royaume de Catherine de Médicis*, 1922.

**Henry III.** (1551-89), King of France, the last of the Valois, was the third son of Henry II. and Catherine de' Medici. He fought against the Protestants at Jarnac and Moncontour. He played a great part in the massacre of St. Bartholomew, and after being elected king of Poland, succeeded to the Fr. throne on the death of his brother Charles IX. (1574). During his reign almost constant wars took place between the Catholics and the Protestants. Finally, he threw himself into the hands of the Huguenots, although he was at times violently anti-Protestant. He was assassinated on Aug. 1 by a friar named Clément. Before his death he nominated Henry of Navarre as his successor. His reign was one almost constant period of civil war. See M. W.

Freer, *Henry III.*, 1858; P. Robiquet, *Paris et la Ligue sous Henri III.*, 1887.

**Henry IV.** (1553-1610), king of France and Navarre, b. in the castle of Pau, the son of Antoine du Bourbon, and Jeanne D'Albret, the heiress of Navarre. He was educated as a Calvinist, and after 1569 was recognised as the Huguenot leader of France. He fought at Jarnac, and led the Protestants in the religious wars which were rife in France at this time. In 1572 he married Margaret de Valois, the sister of the king of France, but within a week followed the massacre of St. Bartholomew, after which H. remained practically a prisoner in the hands of the Fr. court. He finally renounced his religion and later escaped to Alençon, where he repudiated that renunciation and again put himself at the head of the Protestants. Henry III. depended upon him for support, and on the death of that monarch, H. of Navarre became nominally the king of France. His Protestantism made him repugnant to the majority of his subjects, and the Catholic League, strengthened by support from outside, especially from Spain, was strong enough to force him to the S. There he remained for some time until his renunciation of Protestantism and his entrance into the Catholic Church secured for him the allegiance of the vast majority of his subjects. The peace of Vervins ended the war with Spain, and H. was at last free to turn to the internal affairs of the country. He, together with his minister, Sully, reformed the finances of the country, centralised the gov., and above all reduced the power of the nobles. Commerce and trade received a great impetus, and the national debt was largely reduced. Just after the coronation of the second queen, and while he was on the point of setting out to war in Germany, he was assassinated by a religious fanatic. He was essentially a patriot king, and worked throughout for the good of his country. 'Paris,' he said, 'was worth a Mass.' He had many mistresses, and his immoral life was the worst side of his character. See besides the lists of France, the *Memoirs of Sully* and others; also M. W. Freer, *Henry III.*, 1858; E. de La Barre-Duparcq, *Histoire de Henry IV.*, 1881; L. Rambault, *Henri IV. et son œuvre*, 1881; H. M. Baird, *The Huguenots and Henry of Navarre*, 1886; P. de Valèsère, *Henri IV.*, 1930; M. Saint-René Taillandier, *Henri II.*, 1938; R. Ritter, *Henri IV., le Béarnais*, 1945; M. Bourrier (ed.), *Henri IV., peint par lui-même*, 1947.

**Henry V. of France**, see CHAMFORD, COMTE DE.

**Henry II.** (1333-70), king of Castile, surnamed 'El Bastardo,' was an illegitimate son of King Alfonso the Avenger. He led repeated rebellions against Pedro the Cruel, and was supported by the Fr. leader Bertrand du Guesclin. In spite of the opposition of the Eng. under the Black Prince, he was able to establish himself in 1369. He then led an army against Portugal. His reign was conducted more on lines of defence than aggressiveness.

**Henry III.** (1379-1406), king of Castile, surnamed 'The Sickly.' He succeeded his father at the age of eleven, and the period of the regency was somewhat disturbed. He was able, however, to assert his power, and under his personal rule the kingdom prospered. He married in 1393 Catherine of Lancaster. During his reign the Canary Is. were taken possession of by Castile.

**Henry I.** (876-936), surnamed the 'Fowler,' king, but not emperor, of Germany, the son of Otto, duke of Saxony, succeeded (919) to these dominions on the death of his father. He was strong enough to resist the attacks of the emperor, and built up in Germany a strong and consolidated state, which contained Lorraine, and which held Hungary in check. He instituted new methods of attack in warfare, and built large cities throughout Saxony and Thuringia. He was on the point of claiming the imperial throne when he died. The value of his work toward the building up of Germany was very great indeed. See H. Holtzmann, *Geschichte der sächsischen Kaiserzeit*, 1941.

**Henry II.** (973-1021), Ger. emperor, the son of the duke of Bavaria and the grandson of Henry the Fowler. He was of considerable service to the emperor, Otto III., whom, as the last representative of the Saxon house, he succeeded in 1002. He had many revolts to contend against, but he secured Lombardy for himself, defeated the Poles, obtained the promise of the incorporation of Burgundy with the empire, drove back the Gks. in Italy with the help of the Normans, and greatly increased the power of the church. This latter side of his policy was of vast importance, since he raised up the power of the church in order to balance the power of the nobility. He was one of the greatest patrons which the church has ever had, and was canonised after his death. See life by H. Gunter, 1901, and R. Holtzmann, *Geschichte der sächsischen Kaiserzeit*, 1941.

**Henry III.** (1017-56), Ger. emperor, son of Conrad II. He was successively king of the Ger., duke of Bavaria, and duke of Swabia, and finally became emperor in 1039. He restored and kept up the prerogative of the empire, and encouraged the movement towards the reform of the church. He deposed the three rival popes, and placed Clement II. on the papal throne. He forced the duke of Bohemia to acknowledge himself a vassal of the empire, and practically placed Hungary under the allegiance of the emperors. He encouraged art, architecture, and learning. One of his greatest achievements was the estab. of supremacy over the Normans in Italy. See monographs by E. Steinlechner, 1874-81 and P. Kehr, 1930.

**Henry IV.** (1050-1106) Ger. emperor, son of Henry III., and succeeded his father at the age of six. His mother, the Empress Agnes, at first acted as regent, but her rule was too weak, and at the age of twelve the emperor fell into the hands of Anno, archbishop of Köln, by whom he was educated. The position of Anno was

rivalled by that of Adalbert, the archbishop of Bremen, who had great influence over H. The constant changing of his tutors, and the weakness of his training due to the constant rivalry of his regents, led to excesses on the part of the young emperor. He was not, however, without ability. He was declared of age in 1065, but his troubles began with the rebellion of Otto duke of Bavaria, whom he was able finally to crush. The princes of the empire, however, gave him little or no support. The next great trouble of the reign was the quarrel with the papacy, known as the investiture dispute. The papacy under Gregory VII. (Hildebrand) was endeavouring to raise the moral tone of the clergy by securing the abolition of lay investiture, i.e. the appointment of the higher clergy by the civil authority. Though previous emperors had supported the papal claims, H. now entered the lists as the champion of the civil power. His first step was to demand that Gregory should excommunicate his enemies. In reply the pope insisted on H. considering various charges brought against him by his subjects. H. called a council of prelates and announced Gregory deposed. Gregory issued sentence of excommunication against H. H.'s supporters quickly fell away, and he saw that his only hope of success lay in surrender to the papacy. He sought out the pope at Canossa, and there, after waiting for three days in the shirt of a penitent, amidst the snows of the Apennines, he was admitted to the presence and forgiven. The princes of the empire were still dissatisfied. Three anti-emperors were raised up in succession, and although H. won some successes, even his sons were induced to rebel against their father. The papacy also still continued its policy of opposition to the emperor, and although H. was successful in maintaining a pope of his own choice in Rome, he was forced finally to abdicate, and he fled from prison to Liège. Here he was preparing another attack on the Ger. princes and the pope when he died. Pictured usually as a weak, struggling king, H. was in reality, nothing of the kind. His work was of vast importance. He realised that the power of the papacy had increased, and must, for the safety of the empire, be diminished, and he sought also to crush the power of the secular nobles and centralise the gov. as far as possible. See monographs by H. Plotz, 1855-57; W. Giesebrecht, 1863; G. Meyer von Knonan, 1890-1904; and B. Schneidder, 1927.

**Henry V.** (1081-25), Ger. emperor, was the second son of Henry IV. His elder brother, Conrad, was deprived of his rights of succession because of his rebellion against his father, but H. was guilty of the deepest treachery. When he succeeded in 1106 it was held that, since he had supported the papacy previously, he would renounce even such concessions as his father had been able to win. After many struggles with the popes H. was able to obtain a settlement of the whole investiture (i.e.) question by the Diet of Worms, which was concluded in 1122.

By this the papacy kept the right of election and consecration, but the church lands were invested by the emperor or his representative. He was the last of the Franconian dynasty. See monographs by F. W. Giesebrecht, 1890, and H. Benning, 1927.

**Henry VI.** (1135-97), Ger. emperor, was the son of the Emperor Frederick Barbarossa. He was made king of Germany during his early childhood (1169), and succeeded to the empire (1190) on the death of his father whilst leading the crusade. He aspired to establish definitely the power of his dynasty. He crushed the rebellious in Sicily, and overruled the whole empire. He even for a time forced the emperor of the E. empire to do him homage. His Sicilian campaigns form the object of greatest interest in his reign, and he was able to raise a fine army from the ransom which he obtained from Richard I. of England. His attempts to establish his dynasty on the imperial throne failed principally because of his early death. See H. Tösch, *Jahrbücher*, 1867; J. Haller, *Heinrich IV. und die römische Kurie*, 1914; E. Perels, *Erbreichthum Heinrichs VI.*, 1927.

**Henry VII.** (c. 1275-1313), Ger. emperor, was the son of Henry II., count of Luxemburg. He owed his election as emperor at Rome in 1312 to the fact that there was no strong opposition, and that he was regarded as being unimportant. He enriched his own family with the lands of Bohemia, and attempted to revive the old glories of the empire. He, however, made the error of supporting the princes against the growing power of the cities. See lives by K. Gräfe, 1911 and F. Schneider, 1924-28.

**Henry**, surnamed **The Lion** (1129-95), the head of the Welf family. He was duke of Saxony and Bavaria. His possessions in Europe were extensive, and he was restored to some of them by Frederick Barbarossa. He encouraged trade and commerce in Germany, built up ports on the Baltic, and founded the city of Munich. So great, however, did his power become in Germany that a league of princes was formed against him, but this had so little effect that he was finally placed under the ban of the empire (1180). He was reconciled, however, to the Emperor Henry VI. See lives by A. L. Poole, 1912; M. Philippson, 1867, 1918; P. Bartels, 1925; and K. Hampp, *Herschergehalt*, 1927.

**Henry the Navigator** (1394-1460), fourth son of King João I. of Portugal and the Eng. princess, Philippa, daughter of John of Gaunt. He early distinguished himself by his bravery, but he is best remembered for the services which he rendered to geographical discovery. His ships sailed to places on the coast of Africa hitherto unknown. In 1418 the Madeira Is. were discovered. He and his sailors now explored many points on the coast of Africa. He established a school for navigation and an observatory. During his lifetime discoveries were pushed on apace; his influence on the age which followed cannot be exaggerated. See J. P. Oliveira Martins,

*The Golden Age of Prince Henry the Navigator*, 1891 (trans. 1914).

**Henry, Prince of Wales**, eldest son of James I. of England by his wife, Anne of Denmark. He was a prince of great promise, who was the hope of those who disliked Spain. Unhappily he died in 1612 soon after the death of Robert Cecil, and thereafter James drifted rapidly away from France and became a close ally of Spain.

**Henry, Sir Edward** (1850-1931), Brit. commissioner of police and criminologist. Studied for the Indian Civil Service and joined the N.W. Prov. Service. In 1891 he was appointed Inspector-Gen. of Police, and thus began the work in which he won distinction. His name will always be associated with the perfecting of the finger print system of identifying criminals, which system he learned in India. In 1901 H. was appointed Assistant-Commissioner of Police in London, and in 1903 Commissioner, besides being head of the Criminal Investigation Department, holding these offices till 1918. To him more than any other man is due the efficiency of the modern C.I.D. He did much, too, to improve the status of the police, and inaugurated the Peel Training School, besides supporting the Police Orphanage.

**Henry Frederick, Prince of Wales**, (1591-1612), eldest son of James I. He was b. at Stirling Castle some years before the accession of his father to the throne of England. On his birth he was created duke of Rothesay, and in 1610 Prince of Wales. He died at the age of eighteen, when his career had already given great promise.

**Henry, Joseph** (1797-1878), Amer. scientist, b. in Albany, New York. He appears to have been the first to adopt insulated wire for the magnetic coil. He was the first to magnetise iron at a distance, and he was also the first to apply the telegraph to meteorological research. The unit of electrical induction is named after him. From 1868 he was chosen annually as president of the National Academy of Sciences, and he was also president of the Philosophical Society of Washington from the date of its organisation in 1871. He wrote *Contributions to Electricity* (1839) and *Syllabus of Lectures in Physics* (1844).

**Henry, Matthew** (1662-1711), Eng. Nonconformist divine, b. on the borders of Flintshire and Shropshire, son of Philip H., who was ejected by the Act of Uniformity; he possessed private means, and educated his son well. The son relinquished legal studies for theology, and in 1687 he became minister of a Presbyterian church at Chester. His well-known exposition of the O.T. and N.T. (1710) is a commentary of a practical and devotional rather than critical kind. Its racy Eng. style secured for it the foremost place among works of its kind.

**Henry, O.** (1862-1910), Amer. short-story writer, b. at Greensboro, N. Carolina, U.S.A. After a brief schooling, he worked in a drug store in his native tn. until ill-health compelled him to try life on a ranch in Texas. In 1884 he secured

a post in an Austin, Texas, bank, and later in the Texas Land Office. In 1891 he became teller in the First National Bank of Austin, and in 1894 bought and ed. a weekly pub., *Brann's Iconoclast*. Despite its rollicking humour, it was a failure, and in 1895 the young man, whose real name was Wm. Sydney Porter, began work on the *Houston Texas Post*. Fate seemed to have dealt him a finishing blow when, in 1896, he was arrested on the charge of embezzling some of the funds of the Austin bank. The episode was never entirely cleared up. What is known is that in 1898 Porter was sentenced to five years' imprisonment in the Ohio Penitentiary. This was reduced to three years by good behaviour. Within prison walls, now for the first time he began to settle down to the serious business of writing, drawing upon his knowledge of the queer people he had met in the S.W. His MSS. were sent out under the nom-de-plume of O. Henry. His first big stroke of luck came when the *New York World* gave him a contract to supply one short story per week, at a fee of 100 dollars each. It was only some years later that the general reading public learned that O. Henry was Porter, the man who had been in prison. Despite his rather intemperate habits, he was a prodigious worker, and vol. after vol. of his short stories was issued, among them being *Cabbages and Kings* (1904), *The Four Million* (1906), *The Heart of the West* (1907), *The Voice of the City* (1908). Many of his stories are marked by their humour, others by their tenderness for the lowly and the unfortunate. And all of them are notable for the surprising unexpectedness of their endings. His kind of short story resembles that of his predecessors Mark Twain, Bret Harte, and Ambrose Bierce and after him in the same tradition followed Ring Lardner and Damon Runyon. His collected works were pub. in 1917. See R. H. Davis and A. B. Maurice, *The Caliph of Baghdad—Arabian Nights Flashes of the Life, Letters, and Work of O. Henry*, 1931; and life by W. W. Williams, 1936.

**Henry, Patrick** (1736-99), Amer. statesman and orator, b. at Studley in Virginia; the son of a well-educated Scot-man, his mother being of Welsh descent. As a lawyer he was brilliantly successful. In 1765 he became a member of the Virginian House of Burgesses, and led the political agitation which caused the revolution. Declared Stamp Act illegal, 1765; a member of the Continental Congress, 1774; Virginia Convention, 1775; Ratifying Convention, 1788; Governor of Virginia, 1776-79 and 1784-86. Known as the greatest speaker of his generation, perhaps his finest oration was that made in 1765, when the Virginian legislature was protesting against the obnoxious Stamp Act foisted on the Amer. Colonies by King George III. and his Cabinet. H. declared that the people of the Colony had all the rights of natural-born subjects of England and were bound to obey no laws except those of their own making. Then he continued in a famous passage: 'Cesar had his Brutus, Charles I. his

Cromwell, and George III ——"Treason," was shouted by the loyalists, George III," continued Henry, "may profit by their example. If that is treason, make the most of it."

**Henry, William** (1775-1836), Eng chemist, son of an apothecary and writer on chem. *B* at Manchester, and began to study medicine in 1795, took his doctor's degree in 1807, but ill health prevented him from practising, so he devoted his life to chem. research, especially in regard to gases. His *Elements of Experimental Chemistry* (1799) enjoyed considerable vogue, going through eleven eds in thirty years.

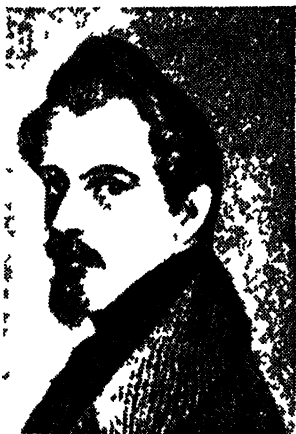
**Henry of Huntingdon** (c. 1090-c. 1150), Eng chronicler. His father by name Nicholas was a clerk who became archdeacon of Cambridge. Hertford and Huntingdon in the time of Remigius, bishop of Lincoln. The celibacy of the clergy was not strictly enforced in England till 1102, hence the chronicler makes no secret of his antecedents, nor did they interfere with his career. The only recorded fact of the chronicler's life is that he went with Archbishop Theobald to Rome in 1139. On the way he halted at Bec, and there met Robert de Torigni, who mentions their encounter in the preface to his chronicle. See I. Forester's trans. (1833) of H's *Historia Anglorum* and F. Wright's ed of *Diagrammatic in Engl. Lit.*, in *Medieval Poets*, vol. II, 1872.

**Henry the Minstrel**, see HARRY BRIND. **Henryson, Robert** (1425?-1500?), Scotish poet. It is surmised that he was connected with the family of Henderson of Korthill. He is described as "Scholmaster of Dunfermline," probably of the grammar school of the Benedictine abbey. There is no record of his ever having studied at St Andrews, which was the only Scottish univ. in existence at that time; his studies were therefore probably completed abroad. His longest work, his *Morall Fabillis of Ispoke the Phygian* (1570), he treated the subject with freshness. Efforts have been made, but in vain, to draw up a chronology of his poems. See collected eds. of his works by D. Laing, 1861; W. W. Metcalf and F. D. Robb, 1917; and H. M. Wood, 1933.

**Henschel, Isidor George** (Sir George) (1840-1934), Polish singer and composer, b. at Breslau and naturalised in England in 1890. Pupil of Franz Götze for singing, and of Richter for theory, at Leipzig (1867-70), continued his studies in singing and composition in Berlin. He conducted symphony concerts at Boston, 1881-84, went to London, 1885, where he directed London Symphony Concerts till 1886. He was knighted in 1914 after giving his last recital. He composed a number of instrumental works. *Stabat Mater* (Birmingham Festival), 1894, and music for *Hamlet*, London, 1892. Operas: *A Sea Change*, 1884; *Frederick the Fair and Nylma* (Dresden), 1899. Wrote *Personal Recollections of Brahms*, (1907), and *Musings and Memories* (his own reminiscences, 1918).

**Henselt, Adolf von** (1814-89), Ger. musical composer, b. at Schwabach,

Bavaria; educated under the patronage of King Ludwig I. at Weimar and Vienna. He made his debut in 1837, and in 1838 went to St. Petersburg, where he obtained an appointment at court and an inspectorship at the Imperial Educational Kustab. His work is small in quantity, but is distinguished by individuality. He himself was a most sympathetic and accomplished pianist. He wrote a pianoforte concerto in F minor, *Poeme d'Amour*, op. 3. *Balade*, op. 31, etc.



ADOLF VON HENSELT

**Henslowe, Philip** (d. 1616), Eng theatrical manager, started his connection with the stage when in 1584 he bought land near what is now the end of Southwark Bridge on which stood the little Rose Playhouse. Afterwards he acquired other theatres, and it was in these that many famous Elizabethan dramatists first had their plays produced. See eds. of his diary by J. P. Collier, 1815, and W. W. Greg, 1904-5.

**Henson, Herbert Hensley** (1863-1947), Eng bishop, b. in London, fourth son of Phos. H., of Broadstairs. Educated privately, and at Oxford Univ., where he was a fellow of All Souls' College from 1884 to 1911—re-elected 1896. He was head of Oxford House, Bethnal Green, 1887-88, vicar of Barking, Essex, 1888-91, incumbent of St. Mary's Hospital, Ilford, 1891-1900; chaplain to the Bishop of St. Albans, 1897-1900, rector of St. Margaret's, Westminster, and a canon of the Abbey, 1900-12 (sub dean, 1911-12), dean of Durham, 1912-15. He was proctor in Convocation in 1903. If a forcible and arresting method of stating his views changed little throughout his ministry, the views themselves changed considerably. In youth he had been a Nonconformist. As vicar of Barking he was an Anglo-Catholic, welcomed as an occasional preacher in St. Albans, Hol

born. At Uford, though still definitely a high churchman, he reduced the ceremonial he found. At St. Margaret's he became a broad churchman and a defender of Modernism. In 1907 he regarded Anglo-Catholicism as a spent force. He proposed to preach in a Birmingham Nonconformist chapel, in spite of the veto of the bishop, Dr. Gore. At this period he was an ardent champion of the Establishment, yet almost every sermon he preached in his later years included an eloquent demand for Disestablishment. His appointment in 1918 to the bishopric of Hereford was strongly resented by the non-Protestant section of the church. H. had not only preached in nonconformist places of worship, but had in his writings commended a latitudinarian interpretation of Christian doctrine almost unusual in an Anglican clergyman: e.g. 'We want expurgated Bibles' (*The Value of the Bible*); and 'No doubt there is much in the primitive accounts of the Resurrection which is demonstrably unhistorical' (*ibid.*). He was bishop of Durham from 1920 to 1939; Canon of Westminster Abbey, 1910-41. Gifford Lecturer, 1935. His pubs. include: *Light and Heaven* (1897), *Apostolic Christianity* (1898), *Ad Rem, Thoughts on the Crisis in the Church* (1900), *English Religion in the 17th Century* (1903), *Religion in the Schools* (1906), *Christian Marriage* (1907), *Christ and the Nation* (1908), *Westminster Sermons* (1910), *Puritanism in England* (1912), *War-Time Sermons* (1915), *Christian Liberty* (1918), *Anglicanism* (1921), *In Defence of the English Church* (1923), *Byron* (Rede Lecture 1924), *Notes on Spiritual Healing* (1925), *The Book and the Vote* (1928), *Disestablishment* (1929), *The Oxford Groups* (1933), *Christian Morality* (1936), *Ad Clerum* (1937), *The Church of England* (1939), *Last Words in Westminster Abbey* (1941), *Retrospect of an Unimportant Life* (2 vols., 1942-43).

**Henty, George Alfred** (1832-1902), Eng. author, b. at Trumpington near Cambridge. He was educated at Westminster School and Cam. Collegio, Cambridge, but left without taking a degree. On the outbreak of the Crimean War he volunteered for active service, and his letters describing the siege of Sebastopol were pub. in the *Morning Advertiser*. In 1865 he adopted the calling of a journalist, and wrote for the *Standard*, going upon many famous expeditions. His first boy's book appeared in 1868, *Out in the Pampas*, and was followed by *The Young France-Tireurs*, a tale of the Franco-Prussian War (1872). He also tried his hand at novel writing, but without success, his great forte being tales of adventure for boys, of which he wrote about eighty.

**Henzada**, tn. of Burma, cap. of the H. dist. It is 66 m. W.N.W. of Pegu on the Irawaddy R. at the apex of the delta proper. Thus it forms a trade centre for the people of the delta and those of the Lower Irawaddy Valley. It is here that the Rangoon line to Bassein crosses the Irawaddy by railway ferry. The dist. has an area of 2856 sq. m. and a pop. of 550,800. Pop. (tn.) 23,600.

**Hepatica**, sometimes considered to be a separate genus of ranunculaceous plants, is more usually included in the genus *Anemone*. The species are herbs and sev. occur in Britain. *A. Hepatica*, the common H., has a dense involucre of green bracts which resemble a calyx, and the blue flowers are visited by bees for the honey they secrete.

**Hepatic Calculi**, see GALL-STONES.

**Hepatitis**, see under LIVER.

**Hepatus** (Gk. *ἥπατος*, a fish, so named because of its being liver-coloured), name of a genus of malacostracan crustaceans belonging to the family Maluidae; the species are found on the Amer. coast, where they bury themselves in sand. They are characterized by a generally convex carapace, triangular frame, and claw-like endings to their legs.

**Heppburn, James**, see BOWWELL, EARL OF.

**Hephæstion** (Ἡφαιστίων), companion and friend of Alexander the Great, was the son of Amyntor. He appears to have served with distinction at the battle of Arbela, and was one of the seven select officers who were in close attendance upon the king's person. He was also commander of the horse guards (*καίτοι*) for a time, and was entrusted with many important commands during the campaigns in Bactria, etc., and the expedition to India. He d. of a fever in 323 at Ecbatana.

**Hephæstus** (Ἡφαιστος), in Gk. mythology, the god of fire and of the arts which need fire in their execution (equivalent to the Roman Vulcan). According to Homer he was the son of Zeus and Hera, and being a weakling from birth, was despised by his mother, who dropped him from Olympus into the sea. But he was rescued by Thetis and Eurynome, with whom he dwelt for nine years, busying himself by making a variety of ornaments, and amongst them the golden chair which he sent to his mother by way of revenge. Having been brought back to Olympus by Dionysus, he was a second time hurled from the mt., and this time by Zeus for championing his mother's cause. He settled for a time in Lemnos, but finally returned to Olympus and acted as mediator between his parents. All the masterpieces of metal which appear in the stories of gods and heroes, the arms of Zeus, the arms of Achilles, the sceptre of Agamemnon, the necklace of Harmonia, etc., were attributed to H., and his workshops were placed on Mt. Olympus, and in various volcanic isles where he received the help of the Cyclopes.

**Heppenheim**, tn. in Hessen, Germany, 13 m. E. of Worms, is a health resort. It dates from the time of the Romans, and contains the ruins of Starkenburg Castle (1661), a former stronghold of the archbishops of Mainz. It has quarries, and manufactures tobacco and machinery. Pop. 8800.

**Hepplewhite, George** (d. 1786), Eng. furniture designer, who had a business in London at St. Giles, Cripplegate. His furniture in mahogany and satin-wood achieved a wide renown, especially his chairs which are made with a shield or heart-shaped back. His *Cabinet-Maker*



and *Upholsterer's Guide* was pub. in 1788. See K. W. Clouston, *The Chippendale Period in English Furniture, 1897*; R. Edwards, *Hepplewhite Furniture Designs, 1918*.

**Heptane**, name given to hydrocarbons of the paraffin series, consisting of 7 carbon atoms, chem. formula,  $C_7H_{16}$ . The two chief are (1) normal boiling point 98.3, sp. gr. at 20° 0.683, contained in petroleum and in the tar-oil from cannel coal. Along with octane, it forms the chief part of the commercial petroleum ether. It is colourless and has a faint agreeable odour. It occurs in the nut pine (*Pinus sabiniana*) of California, from which a resin is obtained which, distilled with sulphuric acid, yields pure hydrocarbon. (2) methyl-ethylpropylmethane—the simplest paraffin with an asymmetric carbon atom, formed by the action of zinc ethyl on acetone chloride.

**Heptarchy** (from Gk. *hepta*, seven, and *archē*, kingdom), name given to the seven kingdoms, Kent, E. Anglia, Sussex, Wessex, Northumbria, Mercia, and Essex, comprising Saxon England. They were not contemporaneously distinct and independent kingdoms, but at some time between the fifth and ninth centuries they each had a separate existence. At the beginning of the ninth century, Wessex, under King Egbert, became the strongest, and absorbed the other kingdoms.

**Heptateuch** (from Gk. *hepta*, seven and *tauch*, book), word applied to the first seven books of the Bible, is formed on the analogy of Pentateuch. It is specially used to designate an A.-S. trans. of these books and the book of Job, made in the tenth century, copies of which are in the Brit. Museum and the Bodleian Library.

**Heptioic Acids**, acids belonging to the fatty series, having seven carbon atoms ( $C_7H_{14}O_2$ ). The only important one is the normal heptioic acid, or oenanthioic acid, a colourless oily faintly smelling liquid, obtained by the oxidation of oenanthol or normal heptyl alcohol. The oenanthol is obtained by distilling castor oil, under reduced pressure and fractionating the product.

**Hera**, in Gk. mythology the queen of Heaven, daughter of Cronus and Rhea, and sister and wife of Zeus. Equivalent to the Rom. Juno. She shared the power of her husband and had authority over the atmosphere, her handmaids being the Horse, or goddesses of the seasons, and Iris, goddess of the rainbow. She is represented as being the most majestic of all goddesses, and as the spotless and incorruptible wife of the king of Heaven. She was the mother of Hephesteus, Ares, Hebe, and Ilithyia, and was the only lawful wife in the Olympian court, hence she was regarded as the stern protectress of honourable marriage. She was worshipped throughout Greece, but the Peloponnese was probably the earliest seat of her worship, and during the Homeric period Argos, Mycenae, and Sparta were her favourite seats. The cuckoo was sacred to her as the messenger of spring (the season in which she wedded Zeus), as well as the peacock and crow, and among fruits the

pomegranate, the symbol of wedded love and fruitfulness.

**Heracles Lyncæus**, see MONASTER.

**Heracleia**, name given to a number of anct. Gk. tns.; (1) An anct. place of Pisatis in Elis, distant about 45 stadia from Olympia, noted for its medicinal waters. (2) A city of Magna Græcia, between the rvs. Aciris and Siris, on the gulf of Tarentum. It was probably founded about 433 B.C., and was first estab. on the anct. site of Siris. It rapidly rose to prosperity, and was selected as the place of meeting of the General Assembly of the Italiot Gks. During the war of Pyrrhus with the Romans, the consul Laevinus was defeated in 280 B.C. near this city. It was still a flourishing and important tn. in Cicero's time, and was in existence much later still, but is now extinct. The 'Tabulae Heracleenses', bronze tablets, containing the *Lex Julia Municipalis* of 45 B.C. for the regulation of the municipal institutions of the tns. throughout Italy, were discovered on this site. (3) *H. Minoa*, on the S. coast of Sicily, at the mouth of the R. Halycus, between Agriguntum and Selinus. It appears to have been a colony of Selinus, at first bearing the name of Minoa, but was seized by Euryleon, a Spartan, who gave it the name of H. It was occupied by the Carthaginians gen. Hanno, in 260 B.C., and in 256 was the scene of the defeat of the Punic fleet, and appears to have been one of the prin. naval stations of the Carthaginians in Sicily. It was still flourishing in Cicero's time and is last mentioned by Ptolemy. (4) Tn. on the confines between Caria and Ionia at the foot of Mt. Latmus. In its neighbourhood was a cave containing the tomb of Endymion. (5) *H. Pontica*, on the coast of Phrygia, situated a little to the N. of the R. Lycus. It had two excellent harbours, and was for a long time in a high degree of prosperity, maintaining a very prominent place among the Gk. colonies in those parts. Its decline dated from about 54 B.C., when it was partly destroyed by Aurelius Cotta in the Rom. wars against Mithridates. (6) Small tn. on the coast of Syria, to the N. of Laodicea ad Mare. Sev. graves cut in rock and pieces of marble pillars etc., have been found here. (7) Tn. on the coast of Eolis, opposite to Hecatonnesi. (8) Tn. in Gallia Narbonensis which is mentioned in the list of Pliny. (9) Name sometimes given to the tn. of Perinthus. (10) *H. Lyncestis*, chief tn. of the prov. of Upper Macedonia, situated at the foot of the Candavian Mts. (11) *H. Sinica*, the prin. tn. of Sinica, a dist. on the r. b. of the Strymon, in Thracian Macedonia. Demetrius, son of Philip V. of Macedonia, was murdered here. (12) *H. Trachina*, tn. in the plain of Mt. Oeta, a little W. of Thermopylae, founded about 426 B.C. by the Spartans. It was besieged by the Rom. consul Glabrio, in 191 B.C., after the defeat of Antiochus at Thermopylae.

**Heracleitus** more generally **Heraclicus** (Gk. *Herakleitos*), of Ephesus, surnamed *Pyralis*, son of Hylson, a Gk. philosopher, who lived from about 535-475 B.C., during the time of the first Persian domination

over his native city. He appears to have travelled in his youth, and on his return to Ephesus was offered the chief magistracy, which, however, he refused, likewise declining an invitation of Darius to visit his court, in order that he might live in retirement. His later years were devoted to his great philosophical work *On Nature*, in which he asserts that everything is in a state of eternal flux (*Ἡρακλείτους φύσικος πάντα ρεῖ*), so that nothing can escape final destruction, not even the gods, and that the ultimate principle into which all existence is resolvable is fire. That fire changes continually to water, and then into earth, and that the earth changes back again to water, and the water to fire. Thus, then, is the world evolved by a natural operation from fire which is also the human life and soul, and therefore rational, an intelligence which guides the whole universe. Spengler derived from H. the idea of change as continuous and rhythmic, as never-ceasing yet exhibiting a definite pattern. It was not, however, the assertion of the reality of change which led Justin Martyr to speak of H. as a Christian before Christ. It was rather the discovery of rhythm or pattern in the process of change that appealed. H., having introduced into Gk. philosophy the term *logos*, (with which the Fourth Gospel opens), Justin Martyr confidently asserts, 'They who have lived in company with the *Logos* were Christians, even if they were accounted atheists; and such, among the Gks. were Socrates and *Ἡρακλείτους*.' See J. Burnet, *Early Greek Philosophy* (chap. iii.), 1892; cf. J. Adam, *Religious Teachers of Greece*, 1908; also G. O. Griffith, *Interpretations of Reality*, 1946.

**Heracles**, see **HERCULES**.

**Heraclian**, or **Heraclianus**, one of the officers of the Emperor Honorius, to whom he rendered good service during the invasion of Italy by Alaric and the usurpation of Attalus. He revolted against Honorius in 412 and, proclaiming himself emperor, collected ships for the invasion of Italy. This he accomplished in A.D. 413, but was defeated and put to death. He is said to have murdered Stilicho in A.D. 408.

**Heraclidēs** (*Ἡρακλείδης*), patronymic from Heracles, and consequently given to all his descendants, but more especially to those who invaded and took possession of the Peloponnesus. It had been willed by Zeus that Heracles should rule over the empire of Perseus, but owing to a trick of Hera's, Eurystheus had taken first place, Heracles becoming his servant. After the death of the latter, however, his sons asserted their claims, and being led by Hyllus, the son of the hero by Deianira, they invaded the Peloponnesus to take possession of the countries acquired by their ancestor. They were at first unsuccessful, but finally conquered Argos, Messenia, and Sparta, and estab. themselves there.

**Heraclitus**, see **HERACLEITUS**.

**Heraclius** (*Ἡρακλίους*), Rom. emperor of the E. reigned from A.D. 610-641. He was the son of Heraclius the Elder,

governor-gen. of Africa, and was born in Cappadocia about 575. In 610 he was sent by his father against Phocas, who had usurped the throne of Constantinople, conquered him, and was elected emperor by the people. He found himself in a difficult position, for E. empire was then in a miserable state, but he managed to get rid of the Avars in 619, and turned his attention against the Persians. The war which had broken out in 603 between Phocas and the Persian king was still raging, and in 616 Egypt fell into the hands of the Persians, so that Constantinople was deprived of its corn supply. Added to this, Constantinople, too, fell into the hands of the Persians the same year. H. waited his opportunity, got ready an army, and commanding his troops in person, fought sev. battles against the Persians which resulted in the reconquest of Syria and Jerusalem, an achievement which seemed at the time impossible. But his glory was of short duration, and before he died, Syria, Palestine, Jerusalem, Mesopotamia, and Egypt came under the dominion of the caliph, H. apparently doing nothing to prevent this.

**Heraeum**, temple of Hera, situated between Argos and Mycenae, and, according to Strabo, the joint sanctuary for both these ins. until the fifth century, when Argos vanquished the Mycenaeans. In 423 B.C. the old temple was burnt down, and the Argives erected a new one built by Eupolemos, in which was placed the great gold and ivory statue of Hera, by the sculptor Polyclitus. Excavations were made by the Amer. Archaeological Institute and School of Athens, 1892-95.

**Heraclion**, (1) prov. of Crete, Greece, situated in the centre of the is. Pop. 162,900. (2) Cap. of the above, now known as Candia (q.v.).

**Herald**, officer of the Royal Household, who acted, and on certain occasions still acts, as messenger between sovereigns and is entrusted with the management of state ceremonial and who formerly superintended jousts, tournaments, and other public ceremonies and supervised coat armour. He was attended by 'pursuivants,' who were learning the duties of the H. The chief of the Hs. acquired the title of 'King of Arms,' and in England in the reign of Edward III. there were two kings of arms, Norroy and Surrey, but in Henry V.'s reign a new king of arms was instituted called 'Garter King of Arms,' and he, together with the other kings of arms and Hs., was in receipt of certain fees connected with public ceremonials and creations of peers. The King, kings of arms and heralds are under the control of the earl Marshal and still carry out state ceremonial such as the Coronation. In 1483 Richard III. incorporated the Hs. into a college known as the Herald's College or College of Arms, which still exists, and the business transacted by this institution is wholly connected with the tracing of genealogies and the granting of armorial bearings. The Scottish heralds were never under the Scots Earl Marshal. They constitute the 'Court of the Lord

Lyon,' whose origin is lost in antiquity. It is one of the public courts of Scotland, is situated in H. M. Register House, Edinburgh, and deals with the heraldry, genealogy, and state ceremonial of that kingdom.

In antc. Greece the H. (*κρηυς*), whose person was inviolable, was of great importance. He summoned the assemblies of the people, at which he maintained order and silence, proclaimed war, and assisted at public banquets and sacrifices. So, too, in Rome the 'Apparitores,' whose duties were similar to those of the Gk. *κρηυς*, and the 'Fetiales,' a special class chosen from the most distinguished families who managed the settlement of war and peace, were held in high esteem; only the 'Præcones,' who acted as 'criers' of public sales, etc., were despised.

**Heraldry.** The term originally denoted the knowledge and business of the herald, but it is now almost invariably applied to the science of armorial bearings. It has long borne this meaning, having supplanted the earlier name of armory. We find evidences of the use of some badge or sign to mark off a tribe, family, or individual, in the earliest days, and in all parts of the world. Homer and Aeschylus describe the devices which the heroes bore on their shields, and antique vases of classical times show many such. But H., in its technical sense of hereditary armorial symbols, was a later development than was once thought. The Bayeux Tapestry, though it shows devices on the shields of the knights, proves also that these devices were not armorial bearings in the later sense, for, in different parts of the tapestry, the same knight is represented with different devices. The mixture of nations caused by the Crusades must naturally have brought about a more regular system of insignia, and it is in the twelfth century that we must place the estab. of H. The striking feature is the way in which the science spread throughout Europe within a few years of its inception. It instantly and adequately filled the need, so pressing in illiterate days, of a simple system for identification of those occupying positions in public life. Its use in civil and domestic life, both for decoration and, especially, for legal purposes on seals, for authentication of deeds, had more to do with its popularity than use in warfare. No effective substitute for it has ever been invented. The misuse of another's arms was treated as equivalent to forgery, so in order to be certain of acting correctly, it became the practice to consult the heralds, who were responsible for seeing that arms and banners displayed in the Royal Army were correct and known to the commanders. Identification of the unit in a feudal army depended solely on these devices. Early feudal magnates conferred arms on their vassals, usually based on their own arms; but, in cases of dispute, a grant from the king naturally prevailed over a grant from any subject, so the theory followed that valid arms must originate in a grant from the Crown, which exacted fees, as on every other description of Royal grant.

The prestige attaching to armorial bearings lies in the recognition that a grant of arms infers a grant of 'nobility,' (in the continental sense), i.e. gentility, in Britain. It has been questioned whether arms necessarily connote gentility in England, but in Scotland non-gentle people are expressly forbidden to bear arms at all. At the time heraldry arose, nobles alone required or had the opportunity of using arms. When a man acquired a feudal fief, or other public position, he received arms as a matter of course. Corporate bodies and cities were soon by analogy held to be persons who either were, or could be, ennobled by grants of arms, and nowadays corporate heraldry is most important, because these bodies are very jealous of any infringement of their heraldic rights. Early bearings were simple in character, and were generally chosen so that they might suggest the name of the bearer. The castle of Castile and the bear of Berne are well-known examples. The heraldic movement started in France and Germany, and soon spread to Britain and the rest of Europe. In England it developed rapidly during the thirteenth and fourteenth centuries, reaching its climax in the reign of Edward III. In the nineteenth century a revival commenced, and the historic, scientific, and artistic importance of heraldry was realised. It has once more attained a level worthy of the esteem in which it was held in the Middle Ages.

Heraldry is still a living science, and in England the Herald's College (i.e. the Royal Officers of Arms incorporated in 1433) continues to exercise its functions. Garter King of Arms is at the head of the College, and, under the control of the earl Marshal, makes fresh grants of arms (£17 upwards) and records pedigrees. In England it has been difficult to enforce the law, since the Registers of the College are private, and the officers remunerated from a div. of the fees. In Scotland and N. Ireland, the kings of Arms are salaried officials, and the fees are collected for H.M. Treasury as part of the Inland Revenue. Ulster King of Arms formerly 'Principal Herald of All Ireland,' is now incorporated with Norroy, King of Arms of England. In Scotland, heraldry has assumed a more important standing than in any other nation, largely owing to the clan system, with its veneration for lineage and kinship (see LYON KING OF ARMS).

In 1672, all older registers were superseded by the 'Public Register of All Arms and Bearings in Scotland,' in which all existing arms were ordered to be registered within a year, as well as future grants. The striking feature of Scots heraldry is that there are relatively few surnames in Scotland, and therefore comparatively few basic coats of arms. The science has largely developed by differentiating these basic arms for the numerous offshoots from the main lines of clans and families. These 'matriculations' are registered at lower fees on proof of the relationship. If this cannot be estab., Letters Patent (£48 upwards) are issued.



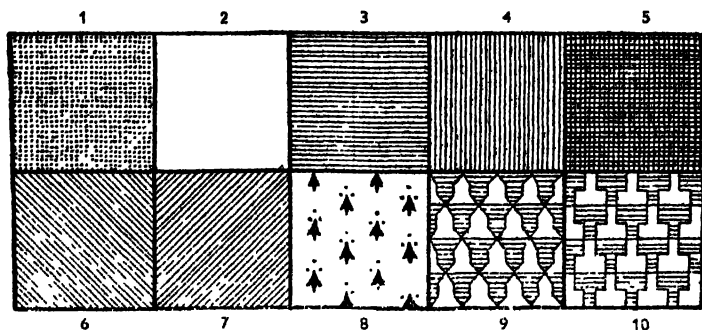


FIG. III. TINCTURES

divided as in Fig. IV. No. 1 is said to be divided per pale, and is described as party. A pale is a perpendicular strip (*see below*), and an escutcheon bearing three pales of one tincture upon a field of another tincture, making six pales in all, is blazoned as paly. Other methods of dividing a shield are also shown in Fig. IV. No. 2 represents a div. per fesse; No. 3, per bend; No. 4, per cross or quarterly; No. 5, per saltire; No. 6, per chevron. A quartered shield has sometimes one or more of its divs. again quartered, and is described as counterquartered or quarterly-quartered. The large divs. are then known as the Grand Quarters. Thus in No. 7, the top right and bottom left are counterquartered, the other divs. being grand quarters.

*Ordinaries* The title ordinaries is given to certain of the earliest devices of H. They are marked by simplicity of form and are generally formed with straight lines. Occasionally they appear

alone, but more commonly they appear in combination with some other figures, or are themselves charged. The chief heraldic ordinaries are eight in number, but many of them have diminutive forms. (1) The Chief is the upper part of the shield marked off by a line of div. According to heraldic books, the part marked off should be one-third of the length of the shield, but in practice the width varies, being made larger if the chief is charged. A diminutive form of the chief is the Fillet, which should occupy one-fourth of the chief. (2) The Fess is a horizontal band across the centre of the shield occupying one-third of the depth, though it and the pale, which should also occupy a third of the whole space, actually vary, as does the chief. (3) The Pale has already been explained as a vertical band in the centre of the field. It is not common. (4) The Cross appears in numerous forms, of which the best known are those which appear in the Union Jack. The study of

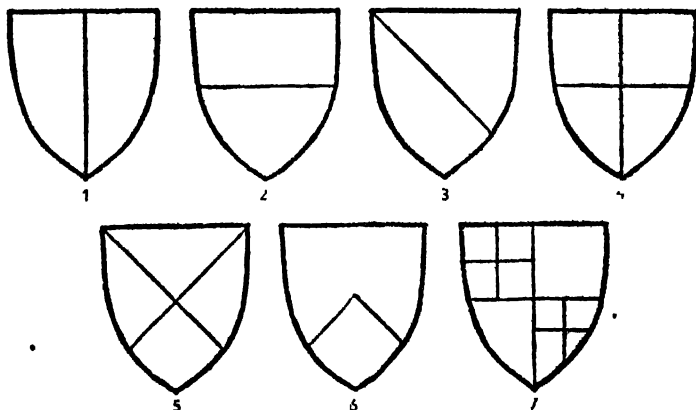


FIG. IV. DIVISIONS OF FIELDS

the cross in H. is complicated by the fact that many of the forms have themselves undergone much adaptation in different times and under different hands. The cross should occupy one-fifth of the field unless charged, when it occupies one-third. (5) The Bend is a band crossing the shield from the dexter chief to the sinister base. It occupies one-fifth of the field unless charged, when it fills one-third. The bend sometimes appears over other charges and in a narrower form, sometimes called the Baston, it was commonly placed over the arms of a younger son. There is no such thing as a 'bar-sinister' in heraldry, but a baston-sinister is one of the marks used to indicate illegitimacy—usually in the case of royal bastards. All charges placed on a bend are put bendwise, that is to say, they are slanted at the same angle as the bend. The last instance of the baston sinister occurred as late as the nineteenth century, in the arms of the earl of Munster. Modern H. has adopted another device in its place—the *bordure wavy*—to denote bastardy in England; while in Scotland it is denoted by the *bordure company*. In England alone the lesson is driven home by means of a *bendlet sinister wavy*, or a *pallet wavy*, on the crest. (6) The *Chevron* is formed from two bands starting respectively from dexter and sinister base and coming together about the honour point. It should occupy one-fifth of the field. (7) The *Pile* is a triangular wedge-shaped figure generally commencing at the middle chief and tapering downwards. (8) The *Quarter* is formed of the first quarter of the shield cut off by lines. It is now very uncommon, having been supplanted by the *canton*, which is smaller but of the same form. Other ordinaries are the *Scotcheon*, or shield used as a charge; the *Tressure*, a narrow border which follows the edge of the field (in Scotland a double *Tressure Fleury* *Counterfleury* is a high honour and never granted except by Royal Warrant, being part of the Scots Royal Arms); the *Bordure*, a border marked of a different tincture from the shield itself; the *Flaunches*, formed by the two sides of the shield cut off by curved lines; the *Fret*, formed by diagonal lines crossing or interlacing. A field entirely covered by a fret is described as *fretty*. A *gyronny* field is one divided both *per fesse* and *per saltire*. The *Lozenge* has an elongated form termed the *fusil*. *Billets* are oblongs set vertically. *Roundels* may be considered together with the ordinaries. They consist of disks or balls of various colours; they have received different names according to the colours. Thus the *bezant* is or; the *plate*, argent; the *hurlet*, azure; the *tortean*, gules; the *pellet*, sable; and the *pomme*, vert. The first two of these and the fountain, which is a roundel divided horizontally by wavy lines, are represented as flat, but the others are shaded to appear spherical. The ring or *annelet* is also a common charge.

**Common charges.**—Under this head are grouped representations of animals, birds,

monsters, trees, plants, etc., and all common objects. The charges are described according to the position or condition of the charge represented. The lion, in particular, being the most popular beast in medieval H., is found in many positions. Thus it is described as a lion rampant, rampant gardant, rampant regardant, passant gardant, salient, sejant, couchant, etc. We have also such forms as the *demi-lion* and the lion's head erased. Other common charges are the stag, leopard, eagle, dolphin, griffin, escallop, rose, fleur-de-lis, estoile (star), and various kinds of trees. The *demi-lion*, *demi-man*, *demi-rose*, etc., show the figure couped or cut off in the middle.

**Differencing.**—The undifferenced arms, i.e. the whole coat, is borne only by one person, and is by him handed on to his heir. Until he succeeds to the undifferenced coat-of-arms, the heir wears it with some difference, the commonest being the addition of a label. Younger sons also differenced the paternal arms, and this was done in various ways, sometimes by a change of tincture, or by the imposition of a bend, or by surrounding the arms with a *bordure*.

**Marshalling.**—To marshal arms means to combine sev. independent coats on one shield, and is used chiefly to denote marriage, or the representation of other families through heiresses. At first, a woman used the undifferenced arms of her father, and the shields of husband and wife were placed side by side, termed *accollée*. Later on, they used one shield, divided *per pale* down the centre, the husband's arms being placed in the dexter half of the shield, the wife's in the sinister half.

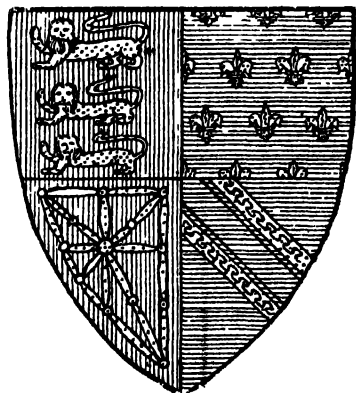


FIG. V. ARMS OF QUEEN ISABELLA

Official arms, such as those of Eng. bishops and certain high officials, are also impaled with the family arms of the prelate or officer. In this case, the official arms are on the sinister. The practice of quartering became common in the fourteenth century. When a man married an

heirss, or inherited arms from an heirss mother, it was often desirable or necessary to display both coats, and where a family had married successive heirsses, it was convenient to divide the shield in four or more divs., and put the arms of the successive heirsses in each. Quarters are numbered: (1) Dexter chief; (2) sinister chief; (3) Dexter base; (4) sinister base. If it is necessary to quarter many arms, the shield is divided into more compartments by vertical lines, but the divs. are still called by the same name. In England, the shield may be divided into any number of quarterings, but in Scotland a shield can only have four quarterings. Scots quartering added requires a re-matriculation. An early example of quartered arms may be seen in those of Isabella, wife of Edward II., who bore in

and the name of no colour is repeated if it can be avoided. Thus the arms of Robert de Chandos, differenced with mullets as a mark of cadency are shown in No. 2 of Fig. VI. These are blazoned, 'or a pile gules charged with three mullets of six points gold between as many others of the second.' The ordinary, however, is named last if it surmounts another charge. When a bend or fesse crosses a field of two tinctures, it is often counter-changed, i.e. the colour of the bend, etc., is reversed as it crosses the field. This can be seen from the arms borne by the poet Chaucer (No. 3), 'per pale, argent and gules, a bend counterchanged.'

*The Helmet.*—Above the shield is set a helmet: gold with grills, for sovereigns; silver with grills, for peers; steel with open visor for knights and baronets;

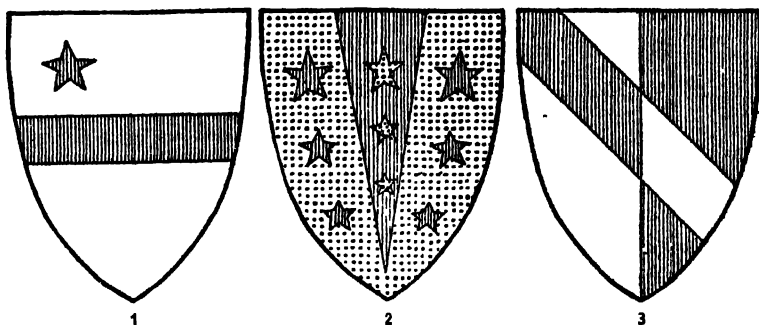


FIG. VI. ARMS OF ODINGSELES, ROBERT DE CHANDOS, AND CHAUCER

the four quarters the arms of England, France, Navarre, and Champagne (see Fig. V.). A husband may always impale his wife's arms, whether she is an heirss or not, but in England the practice has arisen of depicting the arms of an heirss wife upon an inescutcheon of pretence, viz. a small shield in the middle of the husband's shield. The arms upon the inescutcheon become a quartering in the next generation.

*Blazoning.*—To blazon a coat-of-arms is to describe it accurately so that it could be reproduced by anyone having a knowledge of H. Besides the conventional terms of which the most important have been explained above, there are certain other conventions to be observed, chiefly as regards the order. First is named the field, in one word if it be of one tincture. If it be a quartered field, the tinctures are named in order, preceded by the manner of partition. Then follow the charges, the most important being named first. If a charge is in any position other than the centre of the field its position is described. Thus Odingseles bore the arms depicted in Fig. VI. No. 1, which are blazoned as 'argent a fesse gules with a molet gules in the quarter.' Sometimes the ordinary is itself blazoned. Repetition is avoided,

steel with closed visor for esquires and gentlemen. The Royal Helmet is always shown full face and affronté. In England there are seventeenth-century rules that peers, 'esquires, and gentlemen's helmets must be shown in profile, knights' and baronets' full face. In Scotland, provided the correct type of helmet is displayed, it may be shown at whatever angle best suits the crest.

To mitigate the heat of the sun upon a helmet, it was covered by a cloth cap, which became jagged in battle, and in this form is known as the mantling or lambrequin. Its lining is the colour of the prin. 'metal' of the shield, its outside the prin. 'colour,' but peers' mantlings are lined ermine, and in Scotland are crimson outside. At the joint between the mantling and the crest is a twisted skein of silk of the prin. colour and metal of the arms, termed the wreath, or torse. Above this is the crest, which originated in a fan or plume of feathers, but in the fifteenth and sixteenth centuries developed into a weighty device moulded out of leather or wood, more frequently used at tournaments and ceremonial than in warfare. 'Heraldic stationers' invariably draw the helmet and crest much too small in relation to the shield, the actual proportion

as used and drawn in the fourteenth and fifteenth centuries will be seen in Fig. 1., No. 2.

**Supporters.**—Peers, and in Scotland chiefs of clans and a few others, are entitled to have their shield and helmet supported by two creatures (usually human beings or animals). These are considered a high honour, granted only in exceptional circumstances, and they descend to the peer or chief only for the time being, and not to the younger sons. Wives and widows of the peer or chief may use them, but not daughters. In Scotland they are borne also by the son and heir to whom they will eventually pass. Sometimes they pass to an heiress of entail in Scotland.

**Royal Arms.**—These 'ensigns of sovereignty,' or 'symbols of public authority,' are governed by different rules from other arms. They do not pass by succession, even to younger sons of the sovereign, such princes each receiving specially differentiated versions by Royal Warrants directed to the Earl Marshal or the Lord Lyon. Where a king succeeds to the sovereignty of more than one state, a quartered royal coat-of-arms results. Thus, the Brit. Royal Arms now include quarters representing the sovereignty of England, Scotland, and Ireland. Until 1800, the kings of England claimed to be, and styled themselves, kings of France, and therefore quartered the Fr. lilies. From 1714 until 1837, the Brit. Sovereign was also king of Hanover, the arms of which were placed on an escutcheon, but under the Salic Law that kingdom did not pass to Queen Victoria, and accordingly the arms of Hanover were dropped. The Prince of Wales bears the Royal Arms, differentiated by a label as heir apparent, and with an escutcheon of the arms of the principality of Wales. The Royal Arms of each sovereign state indicate the public authority of its ruler; that is, the three leopards of England, the treasured lion rampant of Scotland, and the blue field and golden harp of Ireland, indicate the public authority of the ruling power, within each state; the National Flag (St. George's Cross for England, St. Andrew's Cross for Scotland, St. Patrick's Cross, a green flag with a golden harp, for Ireland) indicate national identity. Similarly, the quartered Royal 'Standard,' properly Banner, is the insignia of the ruling authority—the Crown, in Great Britain; the joined crosses, or Union Jack, the national flag, indicating Brit. national identity.

**Heraldic Flags.**—Armorial bearings were not confined to the shield or tabard worn over the armour, which was the literal 'coat-of-arms' often seen on ancient sepulchral brasses, but were also used in flags or banners, a term which refers to a rectangular flag displaying the coat-of-arms, whilst pennons and 'standards' are long, pointed flags usually displaying the badge and motto only.

**Use of Heraldry.**—Heraldry is used in almost every conceivable way. In architecture, stained windows, and carving in wood and stone, and on furniture, book-

plates, book stamps, silver-plate, seals, and signet rings, stamped or tooled leatherwork.

**Inland Revenue.**—In Great Britain there is an ann. duty of one guinea for use of armorial bearings, two guineas for use on a vehicle. Payment of these duties does not give the right to appropriate a coat-of-arms, and is equivalent merely to a licence to keep a dog, gun, or motor. A coat-of-arms must be obtained through Garter, Lyon, or Ulster, and in Scotland payment of the ann. duty is no defence in a prosecution for use of unregistered arms. See also under LORD LYON KING OF ARMS. See J. Balfour Paul, *Heraldry in Relation to Scottish History and Art*, 1899; A. C. Fox-Davies, *The Art of Heraldry*, 1905, and *Complete Guide to Heraldry*, 1925; Sir W. St. John Hope, *Heraldry for Craftsmen and Designers*, 1906; J. H. Stevenson, *Heraldry in Scotland*, 1914; W. Ewald, *Stigellände*, 1914; C. W. Scott Giles, *The Romance of Heraldry*, 1929, *Civic Heraldry*, 1933, and *Shakespeare's Heraldry*, 1949; D. L. Galbreath, *Papal Heraldry*, 1930; A. Wagner, *Heralds and Heraldry*, 1936; C. and A. Lynch-Robinson, *Intelligible Heraldry*, 1948; Green's *Encyclopaedia of the Laws of Scotland*.

**Heralds' College, or College of Arms**, corporation founded by Richard III. in 1483. It is presided over by the Earl Marshal (whose office is hereditary in the family of the duke of Norfolk), and consists of the Garter, Prin. King of Arms of England; Clarenceux, King of Arms S. of Trent; Norroy, King of Arms N. of Trent who now also holds the office of Ulster King of Arms; the heralds named Chester, Windsor, Lancaster, Richmond, York, and Somerset; and four pursuivants, Bluemantle, Portcullis, Rouge Dragon, and Rouge Croix. They at first resided at Coldharbour, or Putney's Inn, in the par. of All Saints, but in 1554 Queen Mary gave them a building opposite St. Benet's, which was rebuilt after being burnt down in 1666. The heralds—extraordinary appointed by the crown—are not members of the H. C. The H. C. has no jurisdiction in Ireland, where Ulster King of Arms controls heraldry, nor in Scotland where heraldry is under control of the Lord Lyon king of Arms (q.v.).

**Herat**, (1) fort and second largest city of Afghanistan, in the prov. of H., on the R. Heri Rud, about 410 m. W. of Kabul. It is situated in a valley about 120 m. long by 12 m. wide, and is built on an artificial mound nearly 1 m. sq. and 55 ft. in height. It was for a long time the cap. of the extensive empire ruled by the descendants of Timur; but its chief importance now lies in its strategic position, being regarded as the gateway to Afghanistan and India. The manufs. include silk, leather, and woollen goods, and carpets. Oil has been found in the vicinity. Pop. 85,000. (2) Prov. of N.W. Afghanistan, pop. 770,000.

**Héralut**: (1) dept. in the S. of France, forming the N.W. coast of the gulf of Lyons. The surface of the dept. is varied. From the sandy shore of the Mediterranean



rise two hills, the *Pilier de Saint-Clair* and *Saint-Loup*, and behind this sandy tract lies a series of pools (*étangs*), and behind these again plains and hills. The rivers are the *Aude*, the *Orbi*, and the *Hérault*. The dept. is especially famous for its wine, one-third of its surface being planted with vines, but wheat and oats are also grown. Fruit trees, too, flourish, but especially mulberries, olives, and chestnuts, and silkworms are reared. There is considerable mineral wealth, coal, iron, copper, and sea-salt being found in large quantities. The chief manufs. are coarse cloths, brandy, soap. The dept. is divided into the 3 arrons. of Montpellier, Béziers, and Lodève. Cap. Montpellier. Area 2402 sq. m.; pop. 461,100. (2) Riv. of France which rises in the Cevennes and enters the Mediterranean near Agde. It has a length of 122 m.

**Herbarium**, also called *Hortus siccus*, or dry garden, is a systematically arranged collection of dried plants, intended to facilitate the study of botany. The specimens are prepared by being laid between sheets of blotting or botanical paper and afterwards subjected to pressure; certain flora, such as orchids, etc., have to undergo special preparation because their succulence admits only of slight pressure, and they are sometimes placed in hot and or suspended before a fire. Mosses, lichens, and similar plants can be preserved dry in packets; when moistened they regain their appearance in life. The largest H. in the world is contained in the Royal Botanical Garden, at Kew, which is constantly receiving new additions from the various colonies and as the result of botanical expeditions and explorations. The collection made by Carl Linnæus has been the property of the Linnean Society of London since 1828. Marlborough College contains the Wedgwood collection of dried plants, while the H. of Manchester Museum was presented to it in 1901 by its founder, J. C. Molville. Paris contains a notable H. in the *Jardin des Plantes*, while the H. in Berlin is attached to the univ. Brussels, Geneva, Vienna, and Leningrad also have good herbaria. In S. Africa the National H. is estab. in Pretoria; in India, in Calcutta; and in Australia, in Melbourne. The U.S.A. can boast of sev. H. containing mainly flowers of America; among these are the Gray H. (founded by Asa Gray) of Harvard Univ., and the H. in the New York Botanical Garden. The Field Museum of Natural Hist. in Chicago (founded by Marshall Field in 1893) also contains a very carefully classified H. See C. F. Millspaugh, *Herbarium Organization*, 1925.

**Herbart, Johann Friedrich** (1776-1841), Ger. philosopher and educationist, b. at Oldenburg. He began to study logic at the age of eleven and metaphysics when twelve, and at the gymnasium of his native th., which he entered in his thirteenth year, his favourite studies were physics and philosophy. In 1794 he left this institution and went to the univ. of Jena, becoming the pupil of Fichte, but he soon began to disagree with his master,

and in his criticism in 1790 of Schelling, whose philosophy he considered the most logical form of Idealism, he says: 'However many happy thoughts may be scattered about in Fichte's deductions regarding natural right and morality, I consider the fundamental points, i.e. his theory of the recognition of a reasoning being as such, and his doctrine of freedom, as false.' Leaving the univ. in 1797, he acted as private tutor for two years, and then went to Bremen to study philosophy, publishing his views on educational reform in 1801, *Ideen zu einem pädagogischen Lehrplan für höhere Studien*. This was followed in 1802 by his essay on Pestalozzi's work, *Wie Gertrud ihre Kinder lehrt*, as well as by a treatise on the same author's *Idée eines A.B.C. der Anschauung*. The same year he went to Göttingen and pub. *A.B.C. der Anschauung* (1802), *Die ästhetische Darstellung der Welt als das Hauptgeschäft der Erziehung* (1801), *Standpunkt der Beurtheilung der Pestalozzischen Unterrichtsmethode* (1801), *Allgemeine Pädagogik* (his prin. work on education), *Hauptpunkte der Metaphysik* (1806), *Hauptpunkte der Logik* (1806), and *Allgemeine praktische Philosophie* (1808). In 1809 he accepted the chair of philosophy at Königsberg, and pub. in 1812 *Lehrbuch zur Einleitung in Philosophie*, his best known and most widely read book. His chief psychological work, *Psychologie als Wissenschaft neu gegründet auf Erfahrung, Metaphysik, und Mathematik*, appeared in two parts in 1824-25, and the system of metaphysics on which the fundamental principle of his psychology rested was pub. in 1828-29, *Allgemeine Metaphysik nebst neuen Anfängen der philosophischen Naturlehre*. In his *Psychologie* H. rejects the doctrine of mental faculties as one refuted by his metaphysic, and endeavours to prove that all psychical phenomena whatsoever proceed from the action and interaction of elementary ideas or presentations (*Vorstellungen*). He also pub. in 1831, *Encyclopädie der Philosophie*. In 1833 he returned to Göttingen, where he spent his last years, and wrote in 1835, as a supplement to *Allgemeine Pädagogik*, *Umriss pädagogischer Vorlesungen*. H. is important as being the only modern thinker who has not treated education casually in his works; indeed, for him it was the starting-point and end of all his investigations. He says of himself, 'I for my part have for twenty years called to my aid metaphysics and mathematics, besides self-observation, experience, and experiments, in order only to find the foundation of true psychological knowledge.' He imbued the ideas of Pestalozzi, his friend, and did much to make education and educational methods a science. As to his philosophy which was based on that of Kant, the cardinal point of his ontology is that it is a 'pluralistic realism.' As a metaphysician H. proceeds from what he calls 'the higher scepticism' of the Hume-Kantian sphere of thought, the source of which he sees in Locke's perplexity over the idea of substance. In this scepticism the real validity of even the forms of references can be questioned

in view of the contradictions they are seen to involve; but that these forms are 'given' to us as truly as sensations are, follows incontestably since we can as like control the one as the other. Amongst the post-Kantian philosophers H. ranks next to Hegel in importance, apart altogether from his great contributions to the science of education. 'His criticisms,' says Dr. James Ward, 'are worth more than his constructions; indeed for exactness and penetration of thought he is quite on a level with Hume and Kant... But we are most of all indebted to Herbert for the enormous advance psychology has been enabled to make, thanks to his fruitful treatment of it, albeit as yet (1880) but few among the many who have appropriated and improved his materials have ventured to adopt his metaphysical and mathematical foundations.' See H. A. Fechner, *Zur Kritik der Grundlagen von Herbaris Metaphysik*, 1853; T. Lipps, *Zur Herbarischen Ontologie*, 1874; M. W. Drobnisch, *Über die Fortbildung der Philosophie durch Herbart*, 1876; C. Ufer, *Vorschule der Pädagogik Herbaris*, 1883; L. Strümpell, *Das System der Pädagogik Herbaris*, 1894; H. M. and E. Felkin, *Introduction to Herbart's Science and Practice*, 1895; J. Adams, *The Herbartian Psychology Applied to Education*, 1898; F. H. Hayward, *The Student's Herbart*, 1902; A. Darroch, *Herbart and the Herbartian Theory of Education*, 1903; J. Davidson, *A New Interpretation of Herbart's Psychology*, 1906; H. Zimmer, *Führer durch die deutsche Herbartliteratur*, 1910; R. D. Chalke, *Syntheses of Froebel and Herbart*, 1912; T. Fritzsche, *Herbart's Leben und Lehre*, 1921; H. Weiss, *Herbart und seine schule*, 1928.

Herb Christopher, see BANEERRY.

Herbede, tn. in the dist. of Arnsberg, Westphalia, Germany, on the Ruhr. It has stone quarries and coal-mines. Pop. about 6800.

Herbelot de Molainville, Barthélemy d' (1625-65), Fr. Orientalist, b. in Paris. He was educated at the univ. of Paris, and made a special study of Oriental languages. He visited Italy to continue his work, but returned to France and became secretary and interpreter of E. languages to the king. In 1692 he became prof. of Syriac in the Collège de France. His *Bibliothèque orientale, ou Dictionnaire universel contenant tout ce qui regarde la connaissance des Peuples de l'Orient* (1697) is based on the Arabic dictionary of Hadji Khalfa.

Herbert, name of a family prominent in Brit. hist., who came over to England with the Conqueror (1066). II. Fitz-Herbert (II. of Winchester) was chamberlain and treasurer to Henry I. (1100-35). The first earl of Pembroke (created 1468) was a member of this family, and the title was revived for Sir W. Herbert (c. 1501-1570) in 1551. The fourth earl became also earl of Montgomery (1605). Some generations later the H. family diverged into sev. distinct branches, including the lines of the earls of Powis, the Lords H. of Cherbury, of the II. of Muckross (Kerry, Ireland), and of sev. untitled branches in

England, Wales, and Ireland. The earls of Carnarvon are descended from the eighth earl of Pembroke (1656-1733), who held office under Anne.

Herbert, Alan Patrick, Sir (b. 1890), Eng. poet and politician; son of an official of the India office; educated at Winchester and New College, Oxford. A modern Euphuist in verse and a satirist—most of his verse appears in *Punch* and in the *Sunday Graphic*. Has also written novels, the best being *The Water Gypsies* (1932), *Trials of Topsy* (1932), *Topsy*, M.P. (1932). *Holy Deadlock* (also a novel, 1934), is a propagandist effort, aimed at anomalies in the law of divorce. In 1935 he was elected M.P. (Independent) for Oxford Univ. and, in 1937, greatly distinguished himself by securing the passage of an Act radically amending the divorce laws. Knighted 1945. With T. F. Dunhill, he produced a successful musical comedy, *Tantivy Towers* (1931); and revues, *Big Ben* (1946), *Bless the Bride* (1948). Other books: *Sea Shanties* (1927), *Miscellaneous Cakes* (1937), *Plain Jane* (1931), *Less Nonsense* (1944), *Point of Parliament* (1940).

Herbert, Edward, first Lord Herbert of Cherbury (1583-1633), philosopher, historian and diplomatist, b. at Eyton-on-Severn, near Wroxeter. He was educated at Univ. College, Oxford, and while there taught himself Fr., It., and Sp., besides gaining some proficiency in music, and becoming a good rider and fencer. In 1600 he presented himself at court, and was sheriff of Montgomeryshire in 1605. In 1608 he set out on a foreign tour, and became friendly with the grand constable of France, N. de Montmorency, and Casaubon. In 1614 he joined the army of the prince of Orange as a volunteer, and stayed abroad two years, visiting the Elector Palatine and the duke of Savoy. On his return he became intimate with Donne, Carew, Ben Jonson, and Selden, all of whom held him in high esteem and encouraged him to pursue his studies, but in 1619 he was again taking part in public affairs, and was made Eng. ambas. at Paris. While holding this post he tried to bring about a permanent alliance between England and Holland, endeavoured to gain Fr. support for the Elector Palatine on the outbreak of the Thirty Years' war, and suggested a marriage between Prince Charles and Henrietta Maria, but in 1621 he was recalled for quarrelling with De Luynes. He was created Lord Herbert of Cherbury in 1629, and in 1632 a member of the council of war, being reappointed in 1637. He aimed at neutrality during the Civil war, but was forced to admit the parl. force into Montgomery in 1644. H.'s philosophical work, *De Veritate*, is important as being the earliest purely metaphysical treatise written by an Englishman, and is interesting for its theory of perception. He makes the mind consist of faculties which are reducible to four classes, of which the chief is natural instinct (practically the Aristotelian *voies*), the other three being conscience, sensation, and reason. He continued his theory in *De Causis Errorum*

(1645), and completed his religious views in *De Religione Gentilium*, pub. in 1663 (Eng. trans. 1709). He makes all religions, Christian and pagan, resolvable into the five innate ideas, that there is a God, that He ought to be worshipped, that virtue and piety are essential to worship, that man ought to repent of his sins, and that there are rewards and punishments in a future life. H.'s *Poems* were pub. in 1633, and reprinted in 1881; his historical work, *The Life of Henry VIII.*, appeared in 1649.

Herbert, George Edward Stanhope Molyneux and Henry Howard Molyneux, see GARNARVON, EARLS OF.

Herbert, George (1593-1633), divine and poet, younger brother of Lord Herbert of Chertbury, b. at Montgomery Castle in Wales. He was educated at Westminster and Trinity College, Cambridge where he was made a fellow in 1615. In 1618 he was prelector in the rhetoric school at



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Cambridge, becoming in 1619 public orator, and in that capacity drew the notice of King James by his Lat. verses eulogising the king's *Basilion Doron*; and for a time he followed the court and made many distinguished friends. But the death of the king and of his patrons, the duke of Richmond and the marquess of Hamilton, ended his chances of court preferment. He was, however, easily persuaded to adopt the religious life in 1626 by Ferrar, and was ordained priest in 1630 and received the living of Bemerton, Wiltshire. Here he wrote his sacred poems, afterwards pub. by Ferrar, *The Temple*; *Sacred Poems and Private Ejaculations* (1633), which were read by Charles I. in prison, and much praised by Henry Vaughan, Baxter, Coleridge, and Crashaw. H. gave the Anglican Church its finest expression in verse, and on that account is a treasured Eng. heritag. He has not always been given that representative position, and the high regard in

which he was held in the seventeenth century waned early in the eighteenth, and for a century or more his poetry was considered uncouth. Coleridge did much to restore its favour and it has received sympathy and understanding from modern scholars. It is noted for its colloquial phraseology, pliable verse-forms and quiet music. His chief prose work, *A Priest to the Temple*, was first printed in his *Remains* (1652). H.'s poetry is sometimes said to show the influence of Donne, but whereas Donne, as a 'metaphysical poet,' tends to obscurity, the very simplicity of H. is the secret of his power; and where Donne's conceits are the pith of his thought those of H. are mostly illustrations of a thought which really require none. Donne, too, was a rebel against Elizabethan literary fashions, H. was an adherent to them—as is shown by the fact that *The Temple* contains many euphuism and diagrammatic conceits, besides a number of sonnets. See *The Works of George Herbert*, ed. by F. E. Hutchinson (1911), who has restored the text of both the Eng. and Lat. poems to their original state.

Herbert, Sydney, first Lord Herbert of Lea (1810-81), Eng. statesman, b. at Richmond. In 1832 he was Conservative member in the House of Commons for the S. div. of Wiltshire, and made his first speech in 1831, when he seconded Estcourt's amendment to Wood's Bill for admitting dissenters to the univ. He held sev. appointments under Peel, and in 1845 was transferred to the office of secretary for war, with a seat in the cabinet. In 1852 he again held this position under Lord Aberdeen, and became Colonial Secretary in 1855. He was responsible for the War Office during the Crimean War, and took a leading part in the movement for army reform after the war. He was also interested in the hospitals at Scutari, and it was he who sent out Florence Nightingale. In 1859 he was again secretary for war under Lord Palmerston, and in 1860 was made Baron Herbert of Lea.

Herbert, Sir Thomas (1606-82), Eng. traveller and author, b. at York. In 1628 went to Persia with Sir Dodmore Cotton and Sir Robert Shirley. On the outbreak of the Civil war he adhered to the side of the parliament, but was appointed to attend on the king in 1646. In 1660 he was made a baronet for his faithful services to Charles I. He pub. *Description of the Persian Monarchy* (1634), reprinted as *Some Years Travels into divers parts of Asia and Afrique* (1638), and *Phrenodia Carolina* (reminiscences of the captivity of Charles I.), reprinted as *Memoirs of the Last Two Years of the Reign* (1702 and 1813).

Herbert, Victor (1859-1924), Amer. composer and conductor, b. in Dublin, grandson of Samuel Lover. Sent to Germany as a child to study music, particularly 'cello-playing. Became first 'cellist of Strauss's orchestra in Vienna, 1882. Conducted the Pittsburgh Symphony Orchestra, 1898-1901. From 1894 he wrote a large number of light operas,

producing some thirty-five. His best works are *Woodland Fancies*, an orchestral suite (1902), and a symphonic poem, *Hero and Leander* (op. 33), first performed by the New York Philharmonic Orchestra in 1902. His best light operas are *The Wizard of the Nile* (1895), and *The Idol's Eye* (1897).

**Herberton**, tn. in Cardwell co., Queensland, Australia, is 50 m. S.W. of Cairns. It is an important mining centre; tin, gold, silver, lead, and copper are found in the dist. Pop. 3000.

**Herbertshöhe**, settlement on Blanche Bay, N.E. of Neu Pommern, the seat of gov. of the Bismarck Archipelago, the Ger. Solomon Is. and Ger. New Guinea until 1909; administered since 1920 by the Commonwealth of Australia. The chief products are tobacco, cotton, coffee, cocoa. Pop. about 1200.

**Herbivora**, name applied, because of their exclusively herbivorous diet, to the marsupials, contained in the sub-order Diprotodontia; kangaroos, wallabies, etc., are typical examples.

**Herbs** are plants with soft, succulent stems that wither away after flowering, leaving no woody or persistent growth above ground, but may also include plants of which the leaves, shoots, flowers or seeds are used for food, flavouring, medicine, or perfume. Cultural requirements are simple, chiefly a sunny site and a well-drained, medium-rich soil. Garden H. are usually raised for culinary purposes. Angelica, anise, fennel, caraway, chervil, coriander, dill, fenugreek, sweet marjoram, parsley, purslane, summer savory, sorrel, sweet basil, sweet cicely, and rampion are raised from spring-sown seed. Balm, chives, lovage, pot marjoram, pennyroyal, rosemary, horehound, hyssop, lavender, mint, rue, sage, winter savory, southernwood, tansy, tarragon, and thyme may be propagated by cuttings or root div. Many H. have salad uses. H. for drying are harvested just as flowering begins, and dried quickly in shade, hung downwards in a current of air. Seeds are harvested when ripened. Pot-H. is a term usually applied to vegetables such as carrots, turnips, etc., cut up and mixed with flavouring herbs for soups, etc. Medicinal H. such as foxglove and deadly nightshade, and scented H. such as lavender and southernwood, are grown commercially on herb farms. A careful choice of site and soil, skill in culture and harvesting, and good marketing are essentials of success.

**Herbs, Medicinal**, see MEDICINAL.

**Hercegnovi**, or **Castelnuova**, chief tourist place in the romantic fjord of Boka Kotorska, Yugoslavia, with medieval monuments and rich Mediterranean flora. Pop. 1500.

**Herculaneum**, ant. city of Italy, situated at the foot of the W. slope of Mt. Vesuvius, close to the Portici Station, a short distance from Naples. The visible ruins are not so well-known as Pompeii, being much smaller in extent and less visited. The city was probably founded by the Oscans, and it appears to have belonged to the Etruscans, and during the Samnite wars became Rom. According to

Soneca, it suffered from a severe earthquake in A.D. 63, and Pliny the Younger describes how it was destroyed by the terrible eruption of Mt. Vesuvius in 79. The city was then entirely buried under showers of ashes, stones, and streams of lava; few, if any, people could have escaped. Its very name was forgotten in the Middle Ages. In 1719, Prince Elbeuf discovered the ant. site by accident, in a search for marble for the villa he was building at Portici; he learned from the peasants that there were pits quite close from which they obtained marble and had also extracted many statues. Excavations began on a small scale; the theatre, many houses, the forum, and the basilica were discovered, with valuable and beautiful statues and paintings; in the Villa suburbana, a number of bronze and marble busts and statues, and especially a library of valuable papyri, containing works by Epicurus, Philodemus, etc. Among the most famous statues rescued from the ruins are the reclining Hermes, the drunken Silenus, and a pair of wrestlers or runners; these were all in black bronze, and are now in the Naples Museum. H., as we know, not only from the work of art discovered, but also from contemporary sources, was inhabited by a more cultured, refined, and intellectual class than the neighbouring tn of Pompeii (q.v.). Nearly the whole site of the city is occupied by the tn. of Resina, and, therefore, it is difficult to excavate; also, owing to financial trouble with the property owners, the proposals for systematic excavation, begun 1908, were temporarily stopped. Further operations, in which machinery for breaking up the hard crust is employed, were undertaken in 1927-30. H. sustained no damage in the recent World War. See C. Waldston, and L. Shoubridge, *Herculaneum, Past, Present, and Future*, 1908.

**Herculano de Carvalho y Avarijo**, Alexandre (1810-77), Portuguese poet and historian, b. at Lisbon. He was educated for a commercial career, but had to leave Portugal in 1831, when the country was under the despotic ruler Dom Miguel. In 1832 he pub. *A Voz de Profeta*, and in 1833 *A Harpa do Crente*, in which he describes the bitterness of exile, etc., proving himself to be a poet of feeling. In 1837 he founded the *Panorama*, in imitation of the Eng. *Penny Magazine*. This paper had a wide circulation, and H.'s articles were very popular with the middle class. In 1841 he started a new venture, and wrote historical novels in imitation of Sir Walter Scott, viz. *Enrico* (1888), and *Monge de Cister*, but his greatest work was his *History of Portugal from the Beginning of the Monarchy to the end of the Reign of Alfonso III.* (1846-68). This book was regarded as a historical work of the first rank, and is still reckoned among the Portuguese classics. See life by V. Nemerio, 1934.

**Hercules**, son of Alexander the Great and Barsine, the widow of Memnon. He lived at Pergamum, and in 310 B.C. was brought forward by Polyperchon (a distinguished officer of Alexander the Great,

who had been appointed in 319, on the death of Antipater, regent, and guardian of the king) as claimant to the Macedonian throne. He was, however, murdered by Polysperchon in 309, when the latter became reconciled to Cassander.

**Hercules or Heracles** (*Ἡρακλῆς*), most celebrated of all the heroes of antiquity, was the son of Zeus by Alcmene of Thebes in Boeotia. His stepfather was Amphitryon, who was the son of Alcaeus, the son of Persus; and Alcmene was a granddaughter of Persus. Hence H. belonged to the family of Persus. On the day destined for the birth of H. Zeus boasted that a son was going to be born to him who should rule over the house of Persus, whereupon Hera, having exacted from him a promise that the descendant of Persus *b.* that day should be ruler, hastened to Argos, and caused the wife of Sthenelus (son of Persus) to give birth to Eurystheus, and delayed the birth of H. by keeping away the Ilithyie, and so robbed H. of his empire. All the stories told of the hero point to the fact that he was strong from his birth, and under the protection of Zeus and Athena he escaped the dangers prepared for him by Hera, *e.g.* he strangled two serpents sent to destroy him in his cradle. As he grew up, he received instruction in music, wrestling, archery, etc., but happening one day to kill Linus who brought him the lyre, he was sent by his father Amphitryon to tend his cattle. While thus employed, he made further exhibition of his strength by killing a huge lion which haunted Mt. Citharon, and did great damage both to his father's flocks and to those of the king of Thebes. His next adventure occurred on his way back to Thebes, when he met the envoys of Erginus going to demand their ann. tribute of 100 oxen from the Thebans. Cutting off the noses and ears of the envoys, he sent them back to Erginus, who immediately made war on Thebes; but H. defeated and killed Erginus, and was rewarded by the king of Thebes with the hand of his daughter Megara. Soon after this he is said to have paid a visit to Delphi to consult the oracle, and being told by the Pythian to serve Eurystheus for twelve years, went to Tiryns and carried out the injunction laid upon him. He strangled the Nemean lion, fought the Lernaean hydra, captured the Arcadian stag, hunted the Erymanthian boar, cleansed the stables of Augeas, king of Elis, destroyed the Stymphalian birds, captured the Cretan bull, captured and subdued the mares of the Thracian Diomedes, seized the girdle of the queen of the Amazons, captured the oxen of Geryon in Erythia, fetched the golden apples of the Hesperides, and brought Cerberus from the lower world. When he had performed these twelve labours, he returned to Thebes, where he sought Iole, the daughter of Eurystus in marriage, but having in a fit of madness slain his friend Iphitus (the son of Eurystus), he was commanded by the oracle to serve three years for wages and give his earnings to Eurystus, and so entered the service of Omphale, queen of Lydia. After this he sailed

against Troy and killed Laomedon, defeated the Meropes and killed Eurypylos, and helped the gods in their fight against the giants. He also proceeded against Pylos and Lacedæmon, and then journeyed to Calydon, where he married Deianira, after fighting with Achelous for her. Subsequently he settled at Tractus and marched against Eurystus, whom he killed, and carried off Iole as prisoner. This caused Deianira to be jealous, so she sent a shirt to her husband steeped in the blood of Nessus, the centaur, hoping to restore his affection for herself. But the blood had been poisoned by the arrow with which H. had shot Nessus; and so as soon as H. put on the garment the poison entered his body and caused him extreme agony. He tried to tear off the shirt, but was unable to do so, and was brought to Tractus in a dying state. When Deianira saw what she had done, she hanged herself; and H. seeing no remedy for his misfortune, placed himself on a funeral pyre on Mt. Ceta, and ordered it to be set on fire. When it was burning, a cloud came from heaven, and carried him to Olympus, where he became a god and married Hebe. Sophocles's *Trachiniae* give some account of H. and Deianira. Euripides wrote two plays on H.—*Mad Heracles*, in which H., driven mad through the machinations of Hera, murders his children and wife; and *Heracles*, in which Theseus comes to the rescue of H. in his fall (on these see G. Murray, *Euripides and his Age*, 1913).

**Hercules, Pillars of (Herculis Columnae)**, name given to the two rocks (Capre (in the N.) and Abyla (on the opposite coast), which guard the entrance to the Mediterranean at the E. extremity of the Straits of Gibraltar. According to Pliny and Strabo, Hercules tore asunder the rocks which had before entirely divided the Mediterranean Sea from the ocean. Another legend asserts that he forced the two rocks into temporary union to make a bridge for the safe conveyance of the herds of Geryon to Libya, and another that he narrowed the strait so as to shut out the sea-monsters which had previously made their way in from the ocean and infested the Mediterranean.

**Hercules-beetle**, popular name of *Dynastes hercules*, a species of lamellicorn Coleoptera, belonging to the family Scarabaeidae; they inhabit tropical America, and the male insect is remarkable for the possession of a pair of large unequal horns, resembling pincers. Some of the male beetles reach a size of 6 in.

**Hercules' Club**, or *Aralia spinosa*, species of Araliaceae, found in the W. Indies. The tree is closely allied to *A. Ginseng*, from which the drug ginseng is obtained.

**Hercynian Forest**, name used in ancient times to signify the wooded mt. region N. of the lower and middle Danube, and sometimes to include the whole region from the Black Forest to the Sudetes. Later, it became a general designation for the entire wooded, mt. ranges of middle Germany, from the Rhine to the Carpathian Mts.

**Herczeg, Francis**, Hungarian author, b. in 1863 in S. Hungary. Descended from a long line of Gers. settled in the dist. called the Baeska, and his father was mayor of a tn. there. He is recognised as one of the masters of Hungarian literary style. His historical romance, *The Pagans* (1901), dealing with the conversion of the unbelievers in the eleventh century, and *The Gate of Life* (1919), a study of Hungary in Renaissance times, are his best works. See J. Horváth, *Herczeg Ferenc*, 1925; M. Rubiny, *Herczeg Ferenc*, 1926; J. Gassner, *Masters of the Drama*, 1940.

**Herd, David** (1732-1810), Scottish author, b. in Marykirk, Kincardineshire. He spent most of his time in Edinburgh, and was president of the Cape Club, a literary association which had many distinguished members. He is praised both by Scott and Archibald Constable, who acknowledges numerous obligations to him, but his fame rests on his pub. of *Ancient and Modern Scottish Songs, Heroic Ballads, etc.*, collected from Memory, Tradition, and Ancient Authors (2 vols., 1776).

**Herdecke, tn.** in the prov. of Westphalia, Germany, 16 m. S.S.E. of Dortmund, on the Ruhr. It has considerable riv. trade and sandstone quarries. Pop. 6000.

**Herder, Johann Gottfried von** (1741-1803), Ger. critic and poet, b. at Mohrun-gen in E. Prussia. He was educated at the grammar school of his native tn. and at the univ. of Königsberg, where he met Kant and Hamann. At an early age he began to write verses, and his first pub. works were occasional poems and reviews contributed to the *Königsbergische Zeitung*. In 1764 he became a teacher at the cathedral school at Riga, and a few years later assistant pastor, and in 1767 pub. *Fragments über die neuere deutsche Literatur*, in which he maintains that the truest poetry is the poetry of the people, and ridicules the ambition of Ger. writers to be classic. In 1769 he went to Strasburg, where he met Goethe, and in 1771 became court preacher at Buckeburg. During this period he became one of the leaders of the new 'Sturm und Drang' movement, and pub. a jour. with others including Goethe, to diffuse the new ideas. In 1776 he became court preacher at Weimar, and while in this city pub. *Stimmen der Völker in Liedern*, an admirable collection of folk-songs (1778-79); a celebrated work on Heb. poetry, *Vom Geist der hebräischen Poesie* (1782-83, trans. 1833), and his masterpiece, *Ideen zur Philosophie der Geschichte der Menschheit* (1784-91, trans. 1880), which proves H. to be an evolutionist after the manner of Leibnitz. Other works of his are: *Kritische Würder* (1769), *Plastik* (1778), and *Über den Ursprung der Sprache* (1772), a work on language. His books have been ed. by E. Suphan (1877-87). See R. Hayn, *Herder nach Leben und Werken*, 1877-85; E. Nevinson, *Herder and his Times*, 1884.

**Heredia, tn. and cap.** of the prov. of E., Costa Rica, 5 m. W. of San José. It is well situated (altitude 3786 ft.), and is

the centre of an agric. and coffee-growing dist. Pop. (prov.) 55,100; (town) 10,500.

**Heredia, José María de** (1842-1905), Fr. poet, b. near Santiago de Cuba of a Fr. mother and claiming descent from the old *conquistadores*, he migrated to France at an early age. He was educated at Senlis and Havana, but finally went to the École des Chartes in Paris, and made France his home. He was a member of the new school known as Parnassiens, who regarded form as being of supreme importance, and his poems, *Les Trophées*, pub. in 1893, and composed almost entirely of exquisitely fashioned sonnets, provo him to have been a powerful word artist, as well as a master of the art of verse. If somewhat cold in their formal beauty, the craftsmanship of the *Trophées* is such as to rank H. among the foremost sonnet writers, not only of France, but of the world. In 1891 he was elected to the Academy, and in 1901 became librarian of the Bibliothèque de l'Arsenal at Paris. His other works are a trans. of Diaz des Castillos's *History of the Conquest of New Spain* (1878-81); and a trans. of the life of the nun Alferez (1894), or De Quincy's *Spanish Military Art*.

**Hereditaments**, term in Eng. law, meaning property which, unless devised by will or disposed of by the owner in his lifetime must descend to his heir (*q.v.*). H. are practically synonymous with land, and are divided into *corporeal*, i.e. interests in land in possession, or which confer the present right to enjoy the land either personally or through tenants, and *incorporeal*, i.e. rights subsisting in or over lands in the possession of another, such as reversionary and contingent interests (see REVERSIONERS, REVERSIONERS), or rights of way, or other easements. The term also includes heirlooms, and such furniture or chattels as by custom descend to the heir and not as personalty. See also INHERITANCE.

**Heredity** may be defined as the genetic relationship between parent and offspring. Though the study of H. as a science was known to the Gks., and Hippocrates in the fifth century pub. a theory of H., no great progress was made until the end of the nineteenth century. Its practical importance to human beings, both in their personal lives and in plant and animal breeding has led to considerable interest in H., and to the collection of a large number of observations requiring careful examination and confirmation before they can be adduced as scientific evidence in support of any theory of H. Such familiar expressions as 'Like begets like' and 'A chip of the old block' show that the inheritance of similar characteristics has long been widely recognised. A fact less commonly known, however, is that of the inheritance of differences. Ability to differ depends on some peculiarity in the constitution of the offspring, and this it has received from its parents. H. thus includes the possibility of variation, and consequently of evolution. Before attempting to discuss theories of H. it is necessary to review briefly the mechanism

resulting in the production of a new organism. Amongst higher animals and plants sexual reproduction is almost universal, and this consists in the union of two cells or gametes (Ok. *gametes*, spouse), that of the female being the egg cell or ovum, and of the male animal the spermatozoon. In flowering plants the male gamete is usually a nucleus, with a little accompanying cytoplasm, formed in the pollen grain and conveyed by the pollen tube to the egg cell. Free swimming male gametes of plants such as occur for instance in ferns and in mosses are termed spermatozoids. Both gametes are microscopic, and the male is usually very much smaller than the ovum, consisting mainly of nucleus with an almost negligible amount of cytoplasm. The female gamete has a nucleus, and in most cases a relatively large quantity of cytoplasm in which food may be stored. Owing to the deposition of food around or to one side of the ovum, the eggs of oviparous animals are of appreciable size. Fertilisation consists in the union of the male and female gametes; the fertilised egg-cell is the beginning of the next generation, and contains all the potentialities of the new individual. Unless fertilisation has taken place, the ovum is usually unable to develop into the adult organism.

*Theories of Inheritance.*—Lamarck (1809) formulated some laws of inheritance and stressed the importance of the transmission of useful characteristics. He claimed that useful variations were more likely to be inherited than useless ones, and, according to his theory, useful characteristics acquired during the lifetime of an organism could be transmitted to offspring. The possibility of the inheritance of such 'acquired' characteristics will be discussed later. Darwin accepted Lamarck's theory, and suggested that inheritance was effected by pangenesis—that is, by the accumulation in the germ cells of pangens, small particles of each of the different types of body cells. Thus body cells modified by the environment could send particles to the germ cells and the modification would be transmitted. The germ cells of human beings would, on this hypothesis, contain particles from kidneys, liver and every digestive organ, hair, eyes, bones, lungs, various muscles, and every different kind of body cell, so that the number of particles to be included renders the theory highly improbable, and the unerring passage of these particles to the germ cells presents further difficulty. Weismann seems to have been the first biologist to consider experimental evidence essential to the foundation of a theory of H., and, in 1888, as a result of his observations on the embryology of some of the higher animals, strongly denied the inheritance of acquired characteristics. In the animals he investigated, he discovered that the germ cells, i.e. the cells eventually giving rise to gametes, were absolutely distinct from the body cells and were continuous from generation to generation. In the lower animals, the Protozoa and Coelen-

terata, and in many plants, Weismann believed that a small amount of germ plasma accompanied at least some of the body cells. In this way he accounted for asexual reproduction and for the inheritance of a somatic modification by, for example, a plant propagated by a cutting from the modified part. Except in so far as all cells are ultimately derived from the div. of a single cell and so retain indirect continuity, there is little evidence that the germ cells of most plants or of many animals are directly continuous from generation to generation. Moreover, recent research has shown that body cells not too highly differentiated may become dedifferentiated and function as germ cells, so that there is no absolute distinction between body- and germ-plasm. Weismann made a greater contribution to the study of H. by his theory that the nuclear chromatin was composed of minute particles, the determinants, each of which was responsible for the production of a characteristic of the individual. The nucleus (*q.v.*) is now generally recognised as playing a very important role in H., and the theory of the nucleus as the physical mechanism of transmission of hereditary characteristics is based on a large number of observations of H. in plants and animals. A few of the main arguments in support of the theory are given here. (1) The nucleus of any given species of plant or animal consists of a constant number of chromosomes (*see* CELL). Although these appear in nuclear div. and afterwards apparently lose their identity when the nuclei are reconstituted, as soon as div. is about to occur again, the same number of chromosomes is formed. Very occasionally the number may be changed by the loss or addition of a chromosome owing to irregularities in div., but such a change is accompanied by a change in the characteristics of the organism. Moreover, many of these chromosomes have a distinctive form: O, X, J, and V shaped chromosomes are common, and reappear again and again in subsequent divs. There is therefore reason to believe that the chromosomes retain their identity throughout the natural nuclear phases. (2) The number of chromosomes, though large in some species of plants and animals, is always less than the number of characteristics possessed by an organism. Consequently, if the nucleus be the mechanism for the transmission, each chromosome must bear the determinants of sev. characteristics, and all those present in any single chromosome will be transmitted as a group. This is borne out by evidence gained by experiment, and the characteristics forming such a group are described as *linked*. In the vinegar fly *Drosophila*, for instance, it has been shown that the hereditary characters are linked in four groups, corresponding to the four pairs of chromosomes. (3) Subsequent to the formation of gametes, a reducing nuclear div. takes place, so that the gametes contain in their nuclei only half the number of chromosomes (*see* CELL). When the gametes fuse, the number is restored to its full complement,

the diploid number. The significance in H. of this reducing div. is threefold. First, by means of it the number of chromosomes, and inferentially of characteristics, is kept constant instead of doubling during every fertilisation; secondly, it provides a mechanism for the assortment of groups of characteristics, and thirdly, for the segregation, demonstrated experimentally by Mendel, of alternative characteristics (see MENDEL). This segregation will be discussed in the following section on types of inheritance. For the explanation of the assortment, we must consider the reducing div. When this is about to occur, the chromosomes arrange themselves in pairs and one member of each pair passes into the

less cytoplasm than the egg cell, it was first considered that the cytoplasm could play no part in the determination of characteristics. Experiments in which development of an enucleated egg cell has been initiated by the entry of a sperm have, however, resulted in the production of larvae resembling the mother, and consequently the influence of the cytoplasm cannot be disregarded. It has been suggested that before or during the enucleation some emanations from nucleus into cytoplasm took place, but this has not been proved. Objections to the nuclear theory also occur in connection with the inheritance of sex. Morgan and Bridges were led by breeding experiments with the vinegar fly, *Drosophila*, to expect a

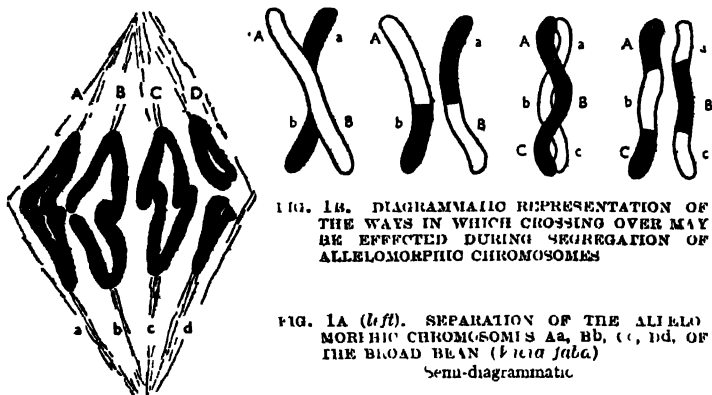


FIG. 1B. DIAGRAMMATIC REPRESENTATION OF THE WAYS IN WHICH CROSSING OVER MAY BE EFFECTED DURING SEGREGATION OF ALLELOMORPHIC CHROMOSOMES

FIG. 1A (left). SEPARATION OF THE ALLELOMORPHIC CHROMOSOMES Aa, Bb, Cc, Dd, OF THE BROAD BEAN (*Vicia faba*)  
Semi-diagrammatic

daughter nuclei. If we consider only two pairs (Figs. 1A, 1B) Aa and Bb, A passes into one daughter nucleus, a to the other; A may pass into the same nucleus as B or as b and in this way may arise differences between gametes of the same parent. When sev. chromosomes are present, it is clear that a very great number of different combinations may occur aided by crossing over between parts of allelomorphous chromosomes, as represented in Fig. 1B. The chromosomes of a pair are alternative or allelomorphous. There is considerable experimental evidence to form a basis for the view that the allelomorphs are derived one from each parent and bear determinants of the same characteristic. For instance if a chromosome bear the determinant for eye colour, its allelomorph will also bear a determinant for eye colour, but not necessarily for the same one. This will be demonstrated in the discussion of experimental work. Although for these and other reasons the nucleus provides an admirable mechanism for the transmission of hereditary characteristics, it cannot in all cases be regarded as the sole mechanism. Since inheritance from both parents is approximately equal and the male gamete has usually much

difference in the chromosomes of the male and female, and examination of the nuclei showed two similar chromosomes, subsequently termed X-chromosomes, in the female. In the male the allelomorph of the X-chromosomes was a chromosome of different form, the Y-chromosome. The other pairs of chromosomes of both sexes were similar, and distinguished as 'autosomes' from the X and Y, or sex chromosomes. Sev. other animals have been found to possess sex chromosomes, though the numbers of these vary, and the male may have more or fewer than the female or may have the same number. Most investigators believe man to have one sex chromosome and woman two. The females of some species of insects have two equal sex chromosomes and the male two unequal ones, and in other species the reverse is the case. It has, however, recently been shown that an insect may have the chromosome constitution of a female or of a male and yet be an intersex or even of the reverse sex. In some cases hormones (h.v.) are assumed to effect complete or partial sex reversal; in others, the sex chromosomes of different parents have been shown to have different values, so that in some combinations a



chromosome that should determine maleness, for example, is feeble than its allelomorph, an intersex or female resulting according to the difference in influence exerted by the two chromosomes. Thus the presence of the sex chromosomes is insufficient in itself to determine the sex of the animal. On account of the effect of the cytoplasm and of hormones, the nucleus cannot be regarded as the sole agent effecting the transmission of hereditary characteristics, but it undoubtedly plays a great part in it. Morgan introduced the conception of the *gene* as the physical determinant of a characteristic. He considers that paired elements, the genes, linked together in a number of groups,

offspring produced yellow, others green seeds in the ratio 3 yellow to 1 green. When the green-seeded plants were crossed between themselves, they always produced green-seeded plants, i.e. they bred true. The yellow-seeded plants were of two kinds. One third of them produced in successive generations only yellow seeds; the remainder produced plants of both kinds. The plants breeding true were described as pure or homozygous for seed colour; the others were impure or heterozygous, and contained the determinants of both colours. From these and similar results for other characteristics, Mendel concluded that segregation of the determinants took place, so

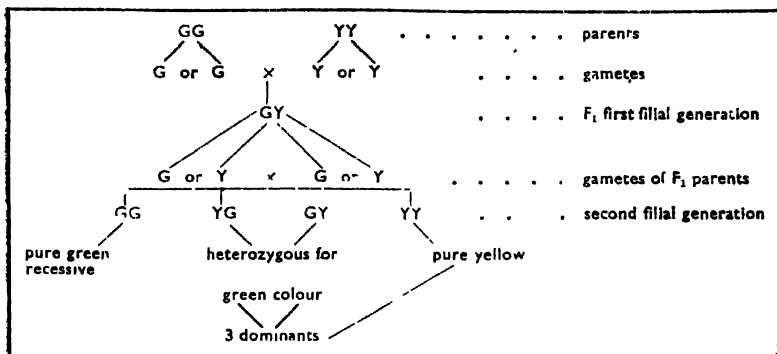


FIG. 2

Diagram showing results of Mendel's experiments in hybridisation with pure green and yellow seeded plants of the common field pea

determine the characteristics of an organism. A single characteristic may be due to the interaction of a number of genes which are to be regarded as biological elements. Morgan's theory is based on two types of experimental work, the genetic results obtained by breeding many generations of *Drosophila* under carefully controlled conditions, and the cytological examination of germ cells of these insects.

**Types of Inheritance.**—Since the current theories of H. are based on the results of experimental work, it is necessary to mention briefly the nature of this work. Johann Gregor Mendel, of Bruum, seems to have been the first investigator to consider quantitative experiments necessary in the study of H., and in 1866 published the results of his experiments in hybridisation (see MENDEL). He selected well-marked, easily recognisable differentiating characteristics of the field pea for observation, and collected results separately for each pair of characteristics chosen. For example, Mendel crossed flowers of plants producing green seeds with those of yellow-seeded plants. All the offspring, constituting the first filial or F<sub>1</sub> generation, produced yellow seeds. When such plants were intercrossed, some of their

that a gamete contained the determinant on only one of a pair of alternative characteristics, i.e. one allelomorph only could be present. This is often called Mendel's law of the purity of the gametes. After fertilisation, the two allelomorphs, one from each gamete, came together and were segregated again before the new gametes were formed. Thus if G, Y (Fig. 2) be the determinants of green and yellow colour respectively, a pure green-seeded plant would have allelomorphs G.G; a pure yellow-seeded, Y, Y, and a hybrid plant G, Y. The gametes would contain either G or Y, but not both. If the parents selected for the hybridisation experiments were pure green and pure yellow, the table in Fig. 2 would represent the results.

Thus the probability of the production of a pure yellow or of a pure green-seeded parent is one in four. The yellow colour is said to be dominant and the green recessive. In all cases studied by Mendel recessive and dominant characteristics appeared, and the ratio for any pair of characteristics was always 1 pure dominant : 2 heterozygous dominants : 1 recessive. This type of H. is consequently described as Mendelian, and was

independently discovered by Bateson, Correns, and de Vries thirty-four years after the pub. of Mendel's results. Subsequent experiments have shown that complete dominance is not an essential of Mendelian inheritance. The offspring of black Andalusian birds crossed with splashed white ones are blue, and these blue Andalusians, intercrossed, produce black, blue, and splashed white birds

tion, and the 'Presence and Absence' hypothesis has been almost completely abandoned, being retained in only very few cases where it provides the simplest explanation of results. In any species which is sexually reproduced, males and females seem to be produced in approximately equal numbers, so that the sex ratio, i.e. the ratio of males to females, is 1:1. The transmission of certain

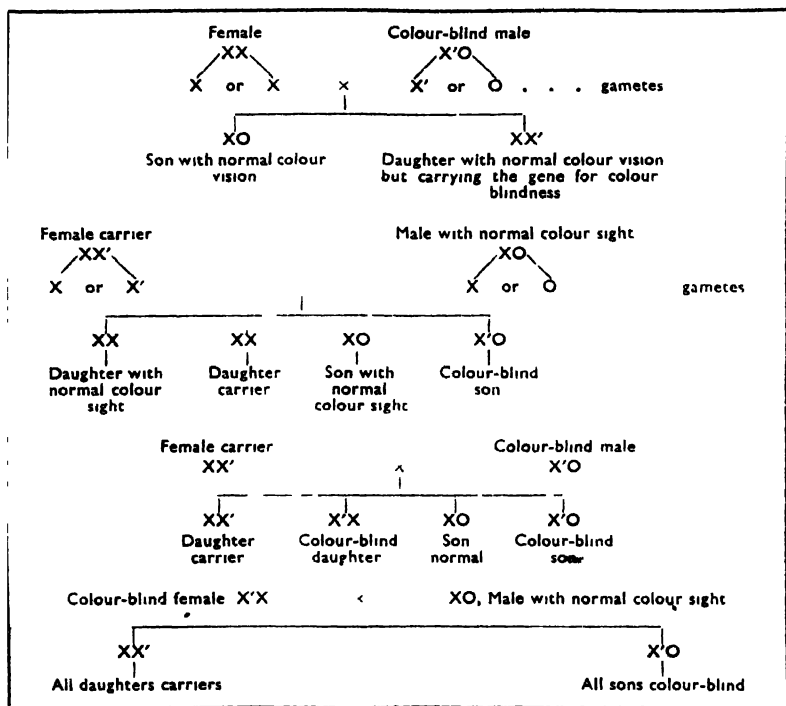


FIG. 3. DIAGRAM SHOWING INHERITANCE OF SEX-LINKED CHARACTERISTICS

respectively in the Mendelian ratio 1:2:1. Thus the two allelomorphs, the genes for black and white, interact, producing an intermediate characteristic, 'blue.' The assumption that complete dominance was essential led to the explanation of Mendelian inheritance by the 'Presence and Absence' hypothesis. According to this, dominance is due to the presence of the genes determining a characteristic, whereas the recessive condition is due to their absence. In the experiment with Andalusian fowls, however, the colour of the hybrids can be explained only on the assumption that the presence of a determinant of the recessive characteristic has modified that of the dominant one. Several other experiments support this assumption.

characteristics is associated with the sex of the parent, and these are termed sex-linked characteristics. The best-known examples of these in man are colour-blindness and haemophilia. The sons of a colour-blind woman and a man with normal colour vision are all colour-blind; the daughters all have normal colour vision, but carry the gene for colour-blindness as a recessive. If one of these daughters marries a colour-blind man, half the sons and half the daughters will be colour-blind, but if the father has normal colour vision, half the sons will be colour-blind and half the daughters will carry the gene for colour-blindness. This and similar phenomena of sex-linkage may be explained by supposing that the sex

chromosomes carry other genes in addition to those determining the sex of the organism. If XX (Fig. 3) represent the two sex chromosomes of woman, each egg cell will contain a single X; and if X be the one sex chromosome of man, each spermatozoon will contain either X or O. If X' represent the sex chromosome carrying the gene for colour-blindness, the table will show at a glance the mode of inheritance.

From this it is obvious that sex-linked characteristics are not inherited in the Mendelian ratio. Similarly the ratio cannot hold for groups of characteristics determined by any other single chromosome. In any case, however, it must be remembered that the ratios given by theory may be disturbed or never be realised, for all the egg cells and sperms do not unite at the same time, so that, for instance, those spermatozoa with the X-chromosome might never succeed in fertilising an egg cell, and all the children would then be sons. However, when large numbers of individuals are considered, the results work out according to the law of probability, and then the Mendelian ratio, the sex ratio, and other ratios deduced theoretically from a knowledge of the genetic constitution, are realised. Mendel himself investigated over one thousand plants, and other investigators have since worked with tens of thousands. Another phenomenon disturbing the theoretical ratio is that of 'crossing over.' This is a phenomenon in which the linkage of genes is broken and an exchange takes place between allelomorph groups of genes. The diagrams show how this may be effected during the separation of allelomorph chromosomes very closely associated before segregation takes place.

**Variation.**—Variation must be mentioned here, for evolution is dependent on the inheritance of variations. In a discussion of variation and H. the following questions arise for consideration. What is inherited? Are variations themselves transmissible, or is the power to vary inherent and the actual variation due to environment? For an account of modes of variation, see VARIATION. Darwin believed continuous variations were inherited and eventually gave rise to new species. This theory, however, awaits biometrical proof, for the process is so slow that it is practically impossible to obtain experimental proof. Discontinuous variations occur in nature, and undoubtedly give rise to new species, but their cause is unknown. The transmission of mutations places the doctrine of common descent on a much firmer foundation than it could otherwise hold. The inheritance of modifications due to the environment is still a disputed question, but what indisputably is transmitted is the power to vary, and it seems probable that organisms possessing this in a high degree will readily react to their environment and begin to vary early in life.

**Statistical study.**—Not only is H. studied by the experimental method, but important branches of the subject also

need special statistical treatment. Galton founded this biometrical study, and Pearson and Weldon have been its leading exponents. There are only three possibilities with regard to any particular characteristic, viz. two pure types and the hybrid, though attempts have been made from time to time, with but little success, to classify kinds of inheritance. Notwithstanding this, it is possible to determine average degrees of resemblance between parent and offspring. The usual elementary example of this is the relation between stature of sons and fathers, and in this a smoothed graph is drawn, which shows the mean stature of sons from fathers of varying but classified heights: e.g. Pearson and Lee after an investigation of some thousands of individuals discovered that the average height of sons

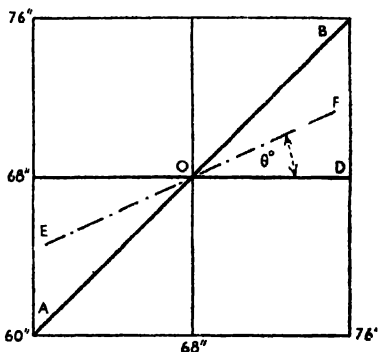


FIG. 4. DIAGRAM SHOWING DEGREE OF RESEMBLANCE BETWEEN STATURES OF FATHERS AND SONS

Vertical, son's stature; horizontal, father's stature  
Tan  $\theta$  = coefficient of correlation

from a group of 62-in. fathers, was 65½-in.; from 65-in. fathers the sons' average was 67 in.; 68-in. fathers, 69-in. sons; 71-in. fathers, 70½-in. sons. Intermediate values were also determined. Now if the sons' statures be plotted on squared paper as vertical heights, and the corresponding fathers' statures be plotted as horizontal distances (see simplified diagram, Fig. 4), it is possible to draw a graph indicating the degree of inheritance which exists between father and son relative to stature. If the resulting graph had been a horizontal line as CD, it would have shown that all classes of fathers had about the same average-height son, i.e. the inheritance would have been zero. If the graph were inclined at 45° to the horizontal, as in the case of AB, it would show that each class of father would tend to have sons of the same average size as themselves, i.e. the inheritance would have been complete or unity. In the example chosen, the graph lies between the horizontal and the 45°

line as, say, EF, and the steepness of this line is a measure of correlation existing between the two statures. The actual coefficient of correlation is expressed as the tangent of the angle FOD, and in this particular example is about 0.51. This simple graphical method is not of absolutely general application, as it assumes that variation is normal and similar in parents and offspring, and it also assumes that the graph EOF is linear; any marked bend in it would demand complicated methods of treatment. Pearson has determined a large number of such coefficients between father and son, e.g. stature 0.51, span 0.46, forearm 0.42, eye colour 0.50; and has suggested 0.48 as a mean value, i.e. on the average the offspring deviate from the mean about half as much as the parent does. If the second parent be also considered, the coefficient increases, though it does not equal unity. It should be remembered that statistical methods are supplementary to experimental methods, and that they apply only to populations in the mass. The co-efficient of H. does not enable the investigator to determine what will occur in any particular case, as, for example, the son of a 6-ft. father may be anything within the whole range of statures, yet in those cases of H., too complex for Mendelian analysis, the statistical method has proved of great value. The 'Law of Ancestral Heredity,' formulated as a result of statistical methods, is of considerable interest. Galton calculated that, on the average, half of the H. of an individual may be taken as derived from the two parents, one quarter from the four grandparents, and so on in the series 0.50, 0.25, 0.125, etc. Pearson has more recently given 0.6244, 0.1948, 0.0630 as the series, thus laying more stress on the parental bequest and less on the ancestral. Harris has found that there is a correlation between stature and length of leg, but no constant relation between stature and arm length, and other recent work includes the biometrical study of the inheritance of feeble-mindedness by Gouldard.

**Disputed Questions.**—One of the most vexed questions in H. is that of the transmission of the acquired characteristics, and some of the differences of opinion with regard to this are due to looseness of definition. According to Lamarck's theory, a modification produced during the lifetime of an organism as a result of the influence of the environment was transmitted to offspring. An acquired characteristic may therefore be defined as one—not previously known to have appeared spontaneously in the ancestry of the individual—appearing as the result of the action of the environment and persisting after the removal of the factors inducing it. Since a recessive characteristic cannot appear unless both parents bear the gene for it, *several* generations may pass before the characteristic is revealed. Other characteristics may remain latent for many generations in an unfavourable environment, but neither recessive nor latent characteristics, when they eventually appear, are acquired, although both

might easily be regarded as new if the genetic constitution of the organism be incompletely known. Both recessive and latent characteristics are inherent in the germ cells. If the offspring be subjected to the environment inducing the change in the parent, they might equally well acquire the same modification, and some of the results adduced as undoubted inheritance of acquired characteristics may quite well be due to direct influence of environment on the offspring. Numerous experiments have been carried out in an endeavour to discover whether acquired characteristics are transmitted, but in most cases the pedigree of the animal experimented upon has been insufficiently known. Other experiments have not been carried out under really critical conditions and others have not been extended through a large enough number of generations to justify the conclusions drawn from them. The earlier experiments were concerned mostly with mutilations. Weismann and other investigators who cut off the tails of many generations of mice found the tails of the progeny unaffected by the experiment. Some of the most extensive experiments on mutilations were carried out on guinea-pigs by Brown-Sequard and his assistants, but the experiments do not warrant a definite conclusion, for they involved injury to the nerves of a parent. Many of the offspring were abnormal, but extremely few were affected in the same way as the parent, so that it seems that a new characteristic appeared, instead of the acquired one being transmitted. Moreover, in many of the experiments there was insufficient evidence to show that the abnormalities were inherent; in all cases the genetic history was not known for a sufficiently large number of generations. A well-controlled scientific series of experiments was carried out by Heslop Harrison and Garrett, on three species of moths. By feeding these on food impregnated with lead nitrate or with manganese sulphate, sooner or later a few black moths appeared. No black moths of these species had previously been recorded as occurring naturally. In breeding, the Mendelian ratio was obtained, the black pigment behaving as a recessive in two species, and as a dominant in the third, as far as the experiments went, but the third set was incomplete. Since the black colour did not appear in the parent, this cannot be considered as an example of inheritance of acquired characteristics in the Lamarckian sense of the term. A perinatal change, however, must have been effected and transmitted, and some modern biologists would regard this as an example of transmission of acquired characteristics. This experiment affords striking evidence against Weismann's theory that the germ-plasm could not be affected by the body-plasm. Kammmerer's experiments on the colour change of salamanders in a changed environment and on the breeding of the midwife toad, *Alytes*, in wet and dry habitats, led him to believe that acquired characteristics were transmitted, but the

experiments require confirmation. Sumner's work on the effect of temp. on mice suggests positive results; Castle's experiments on guinea-pigs give direct negative results. Consequently at the present time experimental work has not yet yielded conclusive evidence in favour of the inheritance of acquired characteristics as such, but Hespel Harrison and Garrett's results show that environment may, through the body-plasm, act on the germ-plasm, and that germinal modifications so acquired are transmissible. On the other hand, it is difficult to account for evolution, if acquired characteristics are not inherited. The indirect evidence of paleontology is considerable, and seems to indicate that such inheritance must have occurred. Another disputed question, already discussed under theories of H., is that of the rôle of the nucleus as a mechanism for the transmission of characteristics, and of other agencies such as the cytoplasm and hormones, aiding or modifying inheritance. Sex inheritance also has caused much controversy, partly on account of the apparently conflicting results of different experiments, and partly because of its connection with sex determination. If sex chromosomes be the sole determinants, then the sex of the organism is determined at fertilisation, and cannot be changed. If the action of hormones, the 'sex hormones', be able to reverse sex, it is conceivable that, whatever the nuclear constitution may be, with increased knowledge sex may in the future be determined at the will of the parents. Some scientists think that sex determination may depend on the nutrition of the parents, but there is no conclusive evidence to support this theory. Teleology and internal impression (see BRIDGES) are not accepted by most scientists, but tradition dies hard amongst cattle-breeders, and so belief in these theories is still fairly widespread.

**Practical breeding.**—One of the most valuable applications of Mendelism is the fixing of pure types. A thorough and systematic search for the best pure lines is one of the best methods of improving these economic plants which are self-fertilised, and Nilsson and his assistants have done valuable work in Sweden in isolating the best pure varieties from the mixtures of numerous types existing in that country. In the case of the maize experiments by Shull and East, a definite increase in vigour has followed systematic crossing. Prof. Biffen has produced wheat which combines the valuable features of one race with the immunity to 'rust' of another otherwise less valuable type. Careful selection in sugar-beet has resulted in an increase of sugar percentage from 8 to 17. More difficulty is experienced with regard to animal breeding, and theory at present does little else than give reasons for principles already discovered, such as careful selection and the 'balancing of defects.' 'Inbreeding' to a type has been a long-established practice and 'outbreeding' to secure vigour is its well-known companion rule. The matter becomes still more difficult when the

principles have to be applied to mankind. The small numbers of progeny of mammals, the time taken for their development, and the large number of characteristics to be considered, make the study of animal breeding, and particularly of eugenics, a very slow process. *Eugenics* described elsewhere, is the science which deals with the improvement of the inherent qualities of the human race, and although its principles are based on H. and are thoroughly sound, yet legislative schemes of positive eugenics are very difficult to introduce, but a beginning has been made in the U.S.A. and under the Nazi regime in Germany, for instance by the compulsory sterilisation of individuals suffering from incurable forms of insanity. As mentioned earlier, conclusions certainly appear to indicate that man is almost entirely the product of inborn factors which are not directly affected by environment, and many responsible students of H. maintain that the improvement of conditions is resulting in the propagation of the degenerate, and the race as a whole is suffering in consequence. Natural selection as such is out of the question, but some restriction on the reproduction of the unfit is undoubtedly demanded by H.

**Cyto-genetics.**—One of the most encouraging recent lines of work has been the correlation of cytology (i.e. microscopic observations of the cell (q.c.) and especially of the chromosomes) with breeding experiments, whereby a new branch of biology, cyto-genetics, has originated, and mutual support has been afforded to what seemed at first to be disconnected studies. The facts of sex-linked inheritance, for instance, have been hooked up with observations on the sex chromosomes. See R. C. Punnett, *Mendelism*, 1905 (7th ed. 1927); C. B. Davenport, *Body-build and its Inheritance*, 1923; R. L. Gates, *Heredity and Eugenics*, 1923, and *Human Ancestry*, 1917; E. M. East, *Heredity and Human Affairs*, 1927; T. H. Morgan, *The Theory of the Gene*, 1928; E. B. Wilson, *The Cell in Development and Heredity*, 1928; P. Popenoe, *The Child's Heredity*, 1929; W. E. Castle, *Genetics and Eugenics*, 1930; E. B. Ford, *Mendelism and Evolution*, 1931; A. E. Watkins, *Heredity and Evolution*, 1935; J. B. S. Haldane, *Heredity and Politics*, 1938.

**Hereford, Earl of.** This title dates from feudal times, the first holder of it probably being Wm. Fitzosbern, who led the right wing of the Conqueror's army at Hastings. The earldom was long held by the great family of Bohun. Before their day it was held by sev. Norman barons (besides Fitzosbern), one of whom left a daughter who married Humphrey Bohun. Their son, Henry de Bohun, received the title in 1199. Among his descendants may be mentioned Humphrey, fourth earl of H. (1278-1322), who was taken prisoner at Bannockburn. In 1380 the heiress of the earldoms of Hereford, Essex, and Northampton, May de Bohun, married Henry Bolingbroke, who was made duke of Hereford in 1397. The

first viscount was Walter Doveaux (d. 1558), who received the title in 1550 for his services in the Fr. wars; the second was the first earl of Essex, the father of Elizabeth's favourite; the third, Robert, was the distinguished general in the parl. army. The present holder of the title is the seventeenth viscount (b. 1865) eldest son of the sixteenth viscount, whom he succeeded in 1930. Viscount Hereford is the premier viscount of England.

Hereford, municipal bor., city and co. tn. of Herefordshire, England, on the

troysed in 1055 by the Welsh, was rebuilt late in the eleventh century, the nave and other Norman parts of the building being completed in about 1140. The beautiful early Eng. Lady Chapel was built in about 1220 and other portions were not completed until the early fifteenth century. In 1786 the Norman W. tower collapsed, bringing down with it two bays of the nave, and its rebuilding was entrusted to Wyatt. He built a W. front so unsuitable that it had later to be replaced, shortened the nave by one



W. F. Mansell

HEREFORD CATHEDRAL FROM THE N.E.,  
SHOWING THE EARLY ENGLISH LADY CHAPEL.

R. Wye, 144 m. from London by railway. Its site was seized by the Mercians in about A.D. 600 and used as an outpost against the Welsh, and later Offa made the Wye the Welsh boundary at Hereford. On account of its position, H. was an important place in the Middle Ages when it became a prosperous centre of the woollen trade. Early charters describe H. as being in Wales. The city's first charter was received from Richard I. in 1189, but long before that it had a well-defined system of local gov. Edward the Confessor made his nephew, Ralph, earl of Hereford, and this Norman earl built its first castle which, however, together with the cathedral, was destroyed in 1055 following a defeat by the Welsh. From that time until the city's capture by the famous Col. Birch in 1645, H. was the scene of constant warfare, the castle finally being demolished in 1660.

The cathedral, founded not later than 680 by its first bishop, Putta, and des-

troyed its clerestory and vaulting in Gothic style, thereby destroying the beauty of its original completely Norman character. The restoration in 1863 was from the designs of Sir Gilbert Scott. The two most treasured possessions of the cathedral are its Chained Library and the Mappa Mundi. The latter is dated about 1300, and, since the disappearance of the Nuremberg map, is probably the earliest map of its kind in existence. Jerusalem is seen to be at the centre of the world. Only two other chained libraries can compare with the one at H., which contains amongst its 1440 books, some very rare manuscripts and early printed vols. Caxton's *Golden Legend*, *The Nuremberg Chronicle* and the only surviving copy of the *Use of Hereford* are a few examples. Other buildings are the Coningsby Hospital (1614), the Cathedral School (1384), S. Ethelbert's Hospital, the churches of All Saints and St. Peter's, the college of the Vicars choral and the Episcopal Palace.

The 'Three Choirs Festival' and 'Three Counties Show' are held in H. every third year. The city is also interesting as the bp. of David Garrick, and, it is claimed, of Nell Gwynne, and for its associations with Sarah Siddons and Fanny Kemble. The fine bridge over the Wye was built at the close of the fifteenth century and from it there is a well-known view of the cathedral. Chief manufs. are tiles and cider-making, fruit preserving and engineering. An airport was opened in 1947 on the H. Race Course. Pop. (estimated) 30,500.

**Hereford Breed, see under CATTLE.**

**Herefordshire**, inland co. on the S.E. border of Wales, bounded on the N. by Shropshire, and on the S. by Gloucestershire and Monmouthshire. Its area is 843 sq. m. and its surface is undulating. The co. is watered by the Wye and its tribs., all of which abound in fish, the Wye being especially celebrated for its salmon. The soil is particularly suitable for the growth of timber, and the oak, ash, and larch abound, but the co. is especially famous for its apple and pear trees. It is also noted for its cattle of bright red hue, with mottled or white faces, which produce very fine beef. There are no minerals of economic importance, and but few manufs. Pop. 113,000. See H. L. V. Fletcher, *Herefordshire*, 1948.

**Herefordshire Regiment.** Formed in 1701 and numbered 36th Foot. Lacked in 1881 with 29th to form the present Worcestershire Regiment (*q.v.*). It gained the motto 'Firm' for its staunchness during active service in Bangalore, India, in 1791. The present H. R. is a territorial army unit, having descended from a volunteer unit formed in 1860. It served in the S. African War during 1900-1902 and raised four battalions during the First World War, which served in France and Flanders from 1914 to 1918. In the Second World War they fought in France.

**Herent, Belgian tn.** in the prov. of Brabant, situated on the R. Dyle, 14 m. E.N.E. of Brussels. Makes starch, oil, tile-stones and bristles. Pop. 8300.

**Herentals, tn.** in Belgium, 19 m. E.S.E. of Antwerp, on the Albert Canal. The tn. hall with belfry dates from the fifteenth century and has manufs. of woollen goods, footwear, tobacco and has diamond-cutting, breweries, tanneries, brick-works, rope-walks, and an iron-foundry. Pop. 14,600.

**Herero**, the Hs. form a branch of the Bantu tribes of the Ovambandus. They lived originally in the land of 'Raruu'—in the reed country—though where this country was situated has never been determined. Two chieftainships migrated from there and dwelt with the Bechuanas. The Hs. owned great herds of cattle. One of the H. chiefs came into conflict with the Bechuanas as the grazing lands of the latter extended far into what was once known as Hereroland and a deciding battle took place at Etomba, N. of Okahandja. The Hs. were beaten and saved their cattle by trekking into the Kaokoveld where they remained unmolested for some two centuries (1550 to

1750). The Kaokoveld then stretched from the Kunene R. in the N. to the Omaruru R. in the S. The second H. tribe remained with the Bechuanas and lived in the N.E. part of the present S.W. Africa (*q.v.*) where their descendants live to this day and are known as Ovambanderu—people from the reed lands. They are not fully recognized as true Hs. by their Kaokoveld tribesmen and are of more gentle character. The mountainous N. Kaokoveld, with its dry grazing lands and pastureless fountains, did not serve the requirements of the Hs. with their ever-growing riches in cattle, and they trekked into the southerly veld and Otjitambi became their religious and controlling centre. In 1750 the first big owners of cattle trekked S. over the Omaruru, drove away the Saan and Berg Damaras, were once more united with their brother tribe, the Ovambanderu, and eventually occupied all the country N. of the Swakop R. and eastwards to beyond Gobabis. Not all the Hs. left the Kaokoveld, the Ovahimba-Hereros remaining in the N. as their grazing and watering places suited for their needs. They are poor classes, but by tradition, religion and language, they are pure Hs. and it is only the Ovamos and Hs. who trekked S., who call them Ovattimba, which means 'antbear'. The H. tribe were largely exterminated by the Gers. in 1903-04 in circumstances of deliberate and callous barbarism. Ger. misrule, oppression and cruelty goaded the Hottentots into rebellion in 1903 and shortly afterwards the Hs. rose too. The ant. enemies were united in misery. The Berg Damaras, through their association with the Hs., suffered equally in the slaughter which followed. The natives were no match for the trained Gers. with their modern weapons and by the close of 1904 it was evident that both the Namas and the Hs. were broken races.

Scattered bands, however, held out and the Gers. then sent thousands of troops into the ter. In the guerilla warfare which followed the first big engagements violence begat violence and the Ger. forces were spurred to fresh vengeance by tales of mutilations of Ger. soldiers who fell into H. hands. Leutwein, regarded as too lenient, was replaced by von Trotha, noted in Berlin for the severity of his dealings with natives. Von Trotha trapped sev. of the H. leaders with treacherous enticements to peace talks and then issued his notorious *Fernichtungsbefehl* (extermination order) under which no H.—man, woman or child—was to receive mercy or quarter. The Ger. soldiers were ordered to kill and take no prisoners and von Trotha explained afterwards that he wished to ensure that never again would there be another H. rebellion. The order was issued against an already defeated people, but for nearly three years the leaderless and disorganised Hs. were hunted like the wild game of the veld and brutally executed. The full story of this typical Ger. sadism, based on the sworn descriptions of eye witnesses, has been told in a bulky official report

presented to the Brit. and S. African Parliaments (pub. by H.M.S.O., London, as *Cmsd.* 9146 of 1918). The war ended in 1907 with the H., Nama and Berg Damara tribes utterly broken and scattered to the winds, some taking refuge in adjoining Brit. ter. Eighty per cent. of the H. people had disappeared and more than half the Hottentots, while the Berg Damaras fared little better. The Hs. in 1901 numbered 80,000; in the official census of 1911 they numbered only 15,130—a decrease of no fewer than 64,870.

**Heresy** (Gk. *aisirosis*), choice, a term in theology, signifying 'a choice of doctrine.' In the N.T. it is used with various meanings, in the Acts of the Apostles it is applied to the Pharisees and Sadducees, in the Epistles of St. Paul it is used to denote the divs. in the Christian church, and in St. Peter's Epistle the modern meaning 'falsely chosen' is first suggested in the words, 'Among you also there shall be false teachers, who shall privily bring in destructive heresies, denying even the master that bought them,' etc. Again, it was used by Ignatius to signify theological error, and as the doctrine became more important, it was restricted to views at variance with the recognised creed. Heresy, according to Thomas Aquinas, implies a profession of Christian belief; the heretic is right in the end he proposes to himself, but wrong in the means to that end. Even in apostolic times, Hs. existed in the church, and before the council of Nice there existed many sects; but these earlier Hs. were chiefly concerned with the introduction of Jewish or pagan elements into the faith of the church, and were punishable by excommunication, etc., whereas the later Hs. were differences in interpretation of Christian truth, and were regarded as legal offences, and punished accordingly. Constantine enacted sev. severe laws for the repression of H., which appear under the title 'De Hæreticis' in the Justinian code, and the penalty of death is even included among these, and in the Eng. law the offender was tried by the archbishop and his council, and then handed over to the king for punishment. But the statute of Henry IV. (De hæretico comburendo) empowered the diocesan to hand over the criminal to the sheriff without waiting for the king's writ. This statute remained in force until Charles II.'s reign, after which time the punishment of heretics was left to the eccles. courts.

**Hereward the Wake**, outlaw, received his title of 'the Wake' from John of Peterborough. According to the *Domesday Book* he was the owner of lands in Lincolnshire, and he may have been identical with the owner of Marston Jabbet, Warwickshire, and Evenlode, Worcestershire. He headed the rising of the Eng. at Ely in 1070, and plundered Peterborough with the help of the Danes. He was joined by Morkere, Seward Bain, and Æthelwine, Bishop of Durham, and held out against William until 1071, when Æthelwine and Morkere surrendered. H. escaped, and

according to Gaimar, was pardoned by William, whom he accompanied to Mafno, where he was murdered by the Normans.

**Herford**, tn. on the Werre in Westphalia, Germany, 10 m. N.E. of Bielefeld it is of anct. origin and contains many old buildings, including a twelfth-century church. It carries on a considerable trade and manufs. tobacco, cloth, and furniture. Pop. 38,500.

**Hergenröther, Joseph von** (1824-90), Ger. theologian. He was author of *Anti-Janus* (1870), in which he defended the doctrine of papal infallibility. The work made a great sensation, and he was made a prelate of the papal household in 1877, becoming a cardinal in 1879, and curator of the Vatican archives. He also wrote *Photius, Patriarch von Konstantinopel* (1867-69), *Katholische Kirche und Christlicher Staat* (a book on the relations of church and state, 1872), a universal church hist. (1876-80), and a hist. of the papal states since the Revolution. See monograph by J. Stamminger, 1892.

**Hergesheimer, Joseph** (b. 1880), Amer. novelist, b. at Philadelphia. He was educated at a Quaker School and the Pennsylvania School of Fine Arts. Estab. himself as one of the best of the younger generation by his novel, *Mountain Blood* (1915), and enhanced his reputation still further with his *Three Black Pennys* (1917). His best novel is *Jaca Head* (1919). Other stories, *The Bright Shaul* (1922), *The Presbyterian Child* (1923), *Balsand* (1924), *Tampico* (1926), and *The Foolscap Rose* (1934).

**Hergest, Red Book of**, name given to a MS. of Welsh literature, which is now in the library of Jesus College, Oxford. It is a folio vol. of 360 leaves written in double columns from the beginning of the fourteenth century to the middle of the fifteenth century, and contains eleven tales, the stories of which mostly relate to King Arthur and the early Brit. kings. Lady Charlotte Guest printed these tales together with *Hanes Taliesin* under the title of *Mabinogion*, 1838-49. The MS. is supposed to have been written at Hergest Court, a seat of the Vaughans, hence its name.

**Heringsdorf**, tn. on the Is. of Usedom in Pomerania, Germany; it is a watering-place on the Baltic. Pop. 1700.

**Heriot**, curious archaic right (now obsolete) incident to copyhold tenure, by which the lord of the manor was entitled, on the death of a tenant, to seize his best beast or other chattel. A H. came in Saxon times to be really a tribute of war-horses, weapons, or armour due to the king on the death of a thane. These anct. Hs. were subsequently rendered obsolete by the institution of reliefs, or sums paid by a vassal on taking up his estate. The copyhold H. had a different though analogous origin and related to socage lands as opposed to those held by knight service. The origin of the right is to be sought in the anct. custom of a freeholder furnishing his tenants in village with cattle and the implements of husbandry. The right of the lord to this kind of H. was restricted to such chattel as the



manorial customary law allowed, and that law varied in different manors.

**Heriot, George** (1563-1624), Scottish goldsmith, b. in Edinburgh. He was brought up in the business of his father, who was a goldsmith, and in 1601 became jeweller to James VI., having already been appointed in 1597 goldsmith to his queen, Anne of Denmark. In May 1603 he accompanied the king to London, and was one of the three persons appointed jewellers to James I. In 1620 a grant was made to him of the imposition on sugar for three years, and out of the proceeds he founded Heriot's hospital, Edinburgh (see **HERIOT-WATT COLLEGE**). He is the 'Jingling Gordie' of Scott's *Fortunes of Nigel*.

**Heriot-Watt College**, Edinburgh, was subsidised from the fund (£23,625) left by George Heriot in 1624 to found and endow a hospital for the maintenance of the sons of poor burghers. This school was completed in 1669, and in 1885 the funds had increased to such an extent that it was reconstituted as a middle-class school, and the H. W. C. was opened to provide a thorough scientific and technical instruction at moderate fees for older students. In 1927, by the provisions of the H. W. C. and George Heriot's Trust Order Confirmation Act, it became a college for providing technical, trade, commercial, and general education for both sexes, and was recognised by the Scottish Education Dept. as a Central Institute for Edinburgh and S.E. Scotland. Day and evening instruction is given in Mechanical, Electrical, Mining, and Oil Engineering, in Applied Chemistry, Brewing, Pharmacy, Building, and Printing; while evening courses in Commerce and Languages are given to students of Accountancy, Banking, Insurance, Secretarial Practice, Stockbroking, and Shipping. The H. W. Literary Society (founded 1868) celebrated its diamond jubilee in 1928. The lord provost of Edinburgh is chairman of the Governors of the H. W. C., and many notable men have received instruction in this institution.

**Heri Rud, or Hari Rud**, riv. of Afghanistan, Asia, rises in the Kon-i-baba Mts. It flows W. for 300 m. to Herat, turns N. at Kushan, and is joined at Pul-i-Khatun by the Keshaf Rud. At Sarikhs it is called Tojend. It enters Turkistan and is lost in the Kara-Kum desert. It contains quantities of fish. Length 650 m.

**Herisau**, tn. in the canton of Appenzell, Switzerland, cap. of the Auser-Rhodod. dist., 5½ m. S.W. of St. Gall. It contains an old bell tower and tn. hall, and the sulphur baths of Heinrichshad are quite near. It manufactures cotton goods and embroidery. Pop. 15,090.

**Heristal**, see **HERSTAL**.

**Heritable and Moveable**, in Scots law, a fundamental distinction between legal rights and things, more or less parallel to the Rom. classification of things corporeal and incorporeal. The distinction is mainly of importance in respect of the rights of an heir as opposed to those of the executors or next of kin of a deceased person. The distinction does not neces-

sarily correspond to the physical distinction between moveable and unmoveable property, although, generally speaking, all rights in or connected with land are *heritable*, and whatever can be moved without injury to itself or the property with which it is physically connected is *moveable* property. But, as in the Eng. law of fixtures (*q.v.*), things which are physically moveable may, in Scots law, become heritable by accession (*Lat. accedo*, to add), and conversely, things in their nature heritable may be constructively converted into moveables by being made part of a moveable whole, as *e.g.* heritable things made part of the common property of a trading company. See J. Erskine, *Principles of the Law of Scotland*, 1754; G. J. Bell, *Commentarius*, 1810.

**Heritable Jurisdictions**. In Scotland all jurisdictions were originally personal, i.e. granted in consideration of the fitness of the grantee, but when the feudal system was introduced certain jurisdictions, such as sheriffships, were annexed to lands and became heritable, like the lands to which they were annexed. Later, when sheriffships ceased to be territorial, the crown made heritable grants of such jurisdiction to landowners. The Jurisdiction Act of 1746, in consequence of the Jacobite rebellion of 1745, abolished all H. J., compensated the persons who owned them, and made jurisdictions personal to the king's courts. See J. Erskine, *Principles of the Law of Scotland*, 1754.

**Heritable Security, or Securities on Heritable Estates**, in Scots law, include all bonds, heritable and of annuity, instruments entitling a creditor to appropriate the rents of land until debts are paid, and all deeds whatsoever capable of constituting a security for debt over lands or the rents and profits of land, and since 1874 also securities by way of ground-annual (*q.v.*). The form of a H. S. is either by (1) a direct conveyance of the lands either subject to the right of redemption or absolutely, or (2) by real or reserved burden containing no disposition of the lands. A H. S. is extinguished by formal redemption. See J. Erskine, *Principles of the Law of Scotland*, 1754.

**Heritor**, in Scots law formerly denoted the owner in fee of a corporeal heritable subject or any par. landowner, but is a term now restricted to such landowners whose estates are subject to the burden of repairing the manse of an incumbent (*q.v.*), or of providing a church for newly erected pars., or maintaining such par. churches as already exist. The term includes railway companies or other corporations and burgh councils, but not life-tenants, tenants on long or short leases, or feu superiors. The question whether real-rent or valued-rent Hs. are to be assessed for repairs depends on the nature of the par. whether landward or burghal. He may, however, do the repairs voluntarily, and assess themselves at a meeting in the presbytery or in the sheriff court, and they are entitled to borrow money for the purpose. See G. J. Bell, *Commentarius*; J. Erskine, *Principles of the Law of Scotland*, 1754.

**Herkimer**, tn. and cap. of H. co., New York, U.S.A., on the Mohawk R. It manufs. paper, furniture, and woollen goods, and is the centre of a dist. famous for its cheeses. Pop. 10,500.

**Herkomer**, Sir Hubert von (1849-1914), Brit. painter, b. at Waal, in Bavaria; son of Lorenz H., master-joiner. His parents took him to America when he was aged two; after six years there, they came to England. He first studied at the School of Art at Southampton, but in 1866 went to S. Kensington. He exhibited at the Royal Academy in 1869, but made his reputation in 1875 by 'The Last Muster,' hung that year. A.R.A., 1879; R.A., 1890; Slade prof. of fine arts at Oxford, 1885-94. In 1883 he founded the Herkomer School of Art at Bushey, which he directed until 1904. In 1907 he was made hon. D.C.L. Oxon and knighted. An associate of the Institut de France and of the Belgian Academy. His works include: 'The Herkomers' (1910), 'Found' (1885), and 'The Chapel of Charterhouse' (1889), both of which are in the National Gallery of Brit. Art), 'Portrait of Miss Katherine Grant,' 'Portrait of the Lady in Black,' 'Hard Times,' 'On Strike,' 'The Guards' Cheer.' Long conspicuous by reason of his great beard, he was clean-shaven in later years.

**Herm**, small is. of the Channel Is. After the First World War it was developed as a holiday resort. It can be visited in the summer from Guernsey, from which it is distant 3 m. The pre-war pop. was about 30.

**Hermæ Pillars**, pillars smaller at the base than at the top, which generally terminated in a head of Hermes. They were found in Attica in the streets of the tns., and after the time of Hipparchus, the son of Pisistratus, they were also erected along the country roads as m-stones, Hermes being the god of traffic. They were particularly numerous in Athens, and in the mkt.-place they formed a long colonnade reaching from the Hall of Paintings to the King's Hall. It was the charge of sacrilegiously mutilating these figures which caused Alcibiades to flee from Athens in 415 and throw in his lot with the Spartans.

**Hermadad**, The (Sp. 'brotherhood'), association of the cities in Aragon and Castile, formed in the middle of the thirteenth century to defend their liberties. It was more firmly organised in 1297, when Sancho IV. came to the throne with the express object of resisting the tyranny and exactions of the nobles, and received favour from Ferdinand and Isabella, who endowed it with large powers of summary jurisdiction. But as the power of the crown increased, so that of the H. decreased, and about the middle of the sixteenth century it ceased to exist. The name was, however, borne by a body of police in Castile, whose chief duty it was to protect the roads. See A. R. Lesage, *Histoire de Gil Blas de Santillane*, 1735.

**Hermann**, or **Herman**, see ARMINIUS.

**Hermann**, Johann Gottfried Jakob (1772-1848), Ger. classical scholar, b. at

Leipzig. He was educated at the univ. of his native city, and was made prof. of philosophy there in 1798, becoming prof. of eloquence and poetry in 1803. He made a special study of classical poetical metres, publishing his *Elementa doctrinæ metricæ*, in 1816. He also wrote on Gk. grammar, and pub. *De emendanda ratione Græcæ grammaticæ* (1801). His other works include eds. of Aristophanes's *Clouds*; Aristotle's *Poetica*; Plautus's *Trinummus*, besides an ed. of Æschylus, and the remainder of Erfurdt's *Sophocles*. See lives by O. Jahn, 1849, and H. Köchly, 1874; and U. von Wilamowitz-Moellendorf, *Geschichte der Philosophie*, 1921.

**Hermannstadt**, see SIBIU.

**Hermannstal**, see MURDW.

**Hermanric**, or **Ermanaric** (d. A.D. 376), king of the E. Goths, founder of their kingdom, which probably included N. Hungary, Lithuania, and S. Russia. He was defeated by the Huns during the migrations of the peoples of N. Europe, and fell on his own sword.

See W. K. Grim, *Die deutsche Heldensage*, 1829.

**Hermant**, Abel (b. 1862), Fr. novelist, b. in Paris. Educated at the Lycée Bonaparte and at the Condorcet. President of the Société des Gens de Lettres (1902). Member of the Fr. Academy. A brilliant satirist of the wealthy bourgeoisie of France. *Mémoires pour servir à l'histoire de la société*, 1907, is the general title of his chief work in this vein. *Le Caravanier*, (1917), a study of wealthy cosmopolitans in Paris, is probably his most widely known book. Other works: *La Mission de Cruchod* (1885), *Madori* (1888), *La Carrière* (1891), *Cœurs primitifs* (1903), *L'Esbrouffe* (1904), *La Belle Madame Héber* (1905), *La Journée brève* (1920), *La Petite Femme* (1923), *Le cycle de lord Chelsea* (4 vols., 1923). See Peltier, *Abel Hermant*, 1921.

**Hermaphrodite**, so named from the mythical *Hermaphroditus* (q.v.), is a living organism containing in itself a combination of the essential male and female functions and structures. It is very doubtful if true hermaphroditism is present in the higher animals, though it is common in many of the lower orders, as in the sluggish leech and snail, the fixed ovstör, or the parasitic tapeworm. Many flowering plants are hermaphroditic, though of varying degrees of intimacy; in the case of the arm, the male organs are situated above and distinct from the female organs, but in the orchid the stamens and carpels are united; this is paralleled in the case of the leech, where the two elements are distinct and separate, though not so in the snail. Some animals may pass through embryonic hermaphroditism, though this condition is doubtful in man as sex appears to be predetermined in the fertilised ovum. (See HERMERTY.) Self-fertilisation is largely prevented by the two elements developing at different times in the organism. This 'want of time keeping' is termed *dichogamy* in botany, and may be either *proandrous dichogamy*, in which the stamens reach maturity first, or *protogynous dichogamy*, in which the car-

pels first reach full development. The earlier maturing of the male element is the more common occurrence, the hag-fish yielding an example from the animal kingdom. Self-fertilisation among animals is rare, but it is found in the fish *Serranus* and in the tape-worm.

*Casual or abnormal hermaphroditism* is occasionally found in fish where an ovary is situated at one side and a testis at the other, in which case it is usual for only one organ to develop and one sex to predominate, with mere indications of the other. Sometimes in such insects as e.g. a butterfly, one pair of wings will be indicative of the male sex and the other pair will be female, or the under and upper surfaces may be of different sex appearance.

*False hermaphroditism* may occur in the higher mammals where malformation has resulted in a female animal possessing the exterior appearance of a male or vice versa. Much discussion has taken place from time to time relative to hermaphroditism and primitive conditions, but the general opinion appears to be that hermaphroditism is not a reversion to, nor a survival of, a primitive condition, but rather a secondary acquisition.

**Hermaphroditus**, son of Hermes and Aphrodite, b. on Mt. Ida. He was finally united into one person, having the characteristics of both sexes, with the nymph of the Carian fountain Salmacis. The statue by Polycles (fourth century B.C.) is famous.

**Hermas**, probable author of *The Shepherd (Pastor Hermas)*, an early Christian allegorical and hortatory treatise divided into three parts: 'Visions,' 'Mandates,' and 'Similitudes.' H. is usually classed as one of the apostolic fathers (q.v.), but there is much discussion as to his identity. The Muratorian canon makes him brother of Pius I., bishop of Rome (c. 139-54). The work is prized as a relic of the primitive church, describing second-century Christianity in Rome. Some recent critics think it may originally have been a Jewish book, revised and enlarged later by a Christian writer. The date usually assigned to it is between A.D. 100 and 150. The shepherd or angel of repentance appears to H. in the fifth vision, and adds instruction (twelve mandates and ten similitudes) to the message he is to deliver to the people. The scene is laid in Rome and the neighbourhood. Irenaeus, Clement of Alexandria, and Origen highly esteemed the work, and it was publicly read in churches at one time, but definitely outside the sacred canon by the fourth century. It aimed at rebuking worldliness and calling sinners to repentance. See J. A. Neander, *History of the Church*, 1825-52; Sir J. Donaldson, *Apostolic Fathers*, 1874; C. T. Cruttwell, *Early Christianity*, II., 1893; J. B. Lightfoot, *Apostolic Fathers* (ed. by J. R. Harner), 1893; H. O. E. Krüger, *History of Early Christian Literature*, 1897; O. von Gebhardt, A. von Harnack, and T. Zahn (ed.) *Father apostolicorum opera*, 1920; E. Hennecke, *Neutestamentische Apokryphen*, 1924.

**Hermeneutics** (Lat. *ars hermeneutica*, to interpret; from Hermes, the messenger of the gods), the science or art of interpretation or explanation of the language of speakers or writers. More especially applied nowadays to the explanation of the Holy Scriptures, covering practically the same meaning as 'exegesis,' a term more often used at the present time. See EXEGESIS.

**Hermes, Georg** (1775-1831), Ger. Rom. Catholic theologian and philosopher. He was founder of the school of Hermesians. His rationalistic doctrines, influenced to some extent by Kant and Fichte, were embodied in his *Einführung in die christlich-katholische Theologie* (1819-29). They were in high favour till the death of Spiegel, archbishop of Cologne, in 1836. Pope Gregory XVI. issued a brief condemning his teaching two years later, but by that time his school had practically vanished. His other prin. work was *Christkatholische Dogmatik* (1831-36). See W. Esser, *Denkschrift auf Georg Hermes*, 1832; K. Eschweiler, *Die zwei Wege der neuern Theologie*, 1926.

**Hermes**, one of the anct. gods of Greece, son of Zeus and Maia, identified by the



HERMES

Roms. with Mercurius. The chief characteristics of his many-sided nature were inventiveness and versatility, and he is represented as possessed of fascination, trickery, and cunning. A legend tells of his invention of the lyre from the shell of a tortoise, and stealing of fifty head of cattle from his brother Apollo on the very day of his birth. His guilt was discovered through Apollo's gift of prophecy, but he was pardoned and granted his brother's friendship and various privileges

in exchange for his wonderful musical instrument. His original functions and primitive character are quite uncertain. Mt. Cyllene in Arcadia was his reputed bp. and the chief seat of his worship. He appears to have been closely connected with almost every phase of life. He was both the messenger of the gods and the guide of the dead to Hades (*Ψυχοπομπός*). As god of the roads and of wayfarers he was honoured by stone heaps and pillars of 'Hermes' (g.r.), often set up as milestones and terminating in a bust. H. was the god of exchange and barter, and even patron of thieves, hence regarded as the giver of gain—any unexpected windfall being called *epheior*. From this may have developed the conception of H. as a god of fertility. He was also the god of dreams, gymnastics, and eloquence. As herald he was mostly represented in art with winged feet, a flat broad-brimmed hat (*petasos*), and a wand (*kanobos* or *caduceus*). See Sir J. G. Frazer, *Golden Bough* (2nd ed.), II., 1906; A. Lang, *Myth, Ritual, and Religion*, II., 1887; L. R. Farnell, *The Cults of the Greek States*, v., 1909.

**Hermes Trismegistus**, see HERMETIC BOOKS and THOTH.

**Hermetical Seal**, in alchemy and chom. is the method of sealing a glass vessel by actually fusing the glass, without employment of a cork or stopper. It is so called after Hermes Trismegistus (g.r.), the mythical founder of chemistry.

**Hermetic Books**, form of encyclopædia, the sacred canon of the ant. Egyptians, fragments of which are all that survive. It originally consisted of forty-two books, divided into six sections, treating of religion, art, science, geometry, astronomy, medicine, liturgical rites and ceremonies, hymns, laws, the nature of the gods, etc. The word 'hermetic' is derived from Hermes Trismegistus, the Gk. designation of Thoth, the Egyptian god of intelligence. The books are evidently based on Egyptian mythology; but neither the time at which they were written, nor the author, can now be determined. Fragments of the Gk. and Lat. texts exist in the writings of Stobæus, Cyrillus, Lactantius, and Suidas, some of which were trans. into Fr. by Ménard in 1868. Traces of Neo-Platonist ideas can be traced in the books, as well as indications of the influence of the Jewish philosopher, Philo. See A. Kingsford, *The Hermetic Works*, 1885.

**Hermias**, (1) Gk. philosopher of the Alexandrian school, and a disciple of Proclus. Wrote a commentary on Plato's *Phædras*. (2) Christian philosopher of the fourth century. One small thesis of his is extant, in which he attacked pagan philosophy for its illogicality. See van Otto, *Corpus apologetarum*, Jena, 1872.

**Hermione** (mod. Kastri), an ant. coast-vil. of Greece, prov. Argolis and Corinthia. The rocky peninsula of Visti forms a double point N. and S. Ruins of a temple to Poseidon remain. It was founded by the Dryopes. See Pausanias, II. 34; Herod., viii. Pop. about 3000.

**Hermit** (Gk. *ἐρημίτης*, a solitary; in *ἐρημία*, a desert), name given to one who

retires into solitude in order to live a more holy life. The words 'hermit' and 'eremite' were apparently used indifferently until the middle of the seventeenth century, but 'hermit' is the spelling now generally adopted, 'eremite' appearing only in poetry, etc. Anchorite is another synonym. As early as the third century Hs. began to appear in the Christian church, and the advocates of asceticism were the first to set the example by withdrawing from the cities and taking up their abode in rudely-formed huts in desert or in forests. But these, as a rule, went in companies, whereas the H. went a step further and withdrew altogether from mankind, living alone. The first H. is said to have been Paul, a native of the Lower Thebaid, who, in the time of the Decian persecution (250), fled into the desert. His story is told by St. Jerome, who records that he was visited by St. Anthony, another anchorite, who was generally held to be the first great example and preacher of the H. life. But the Stylites, who spent their lives at the tops of pillars, and the *Isacel*, who lived on herbs, were not true Hs., nor were those who, in later times, separated themselves from their fellow-men to live in caves solely to avoid intercourse with society, and not from any religious motives. Hermitism was not so popular in the W. as in the E. church, probably owing to the unadaptability of the climate, and as monasteries developed Hs. became more scarce.

**Hermitage**, dry, red wine, resembling Burgundy in colour and body, obtained from the vineyards of the Rhone valley. It is not dissimilar from the best kind of claret.

**Hermit-crab**, family of unsymmetrical crustaceans characterized by a hook-like attachment to the pleopods, by means of which the animal can secure itself within the shell. *Supanurus bernhardus*, the commonest Brit. species, generally inhabits the shell of the whelk. See also COMMENSALISM.

**Hermoerates** (c. 460–407 B.C.), Syracusan statesman and general, who succeeded in uniting the Siceliots (421) so as to enable them to resist the Athenian expedition against Sicily (415). After the Athenian defeat (413) he helped Sparta against Athens, and held a high command at the naval battle of Cynossema (412). On his defeat at Cyzicus he was deprived of his command and exiled (409). H. fought later against Carthage, and was killed in attempting to return to Syracuse (407). He was one of the most energetic, patriotic, and incorruptible leaders of antiquity. See Thuc. iv. viii.; Diod. xli.; G. Grote, *Hist. of Greece*, x. 81, 1846–56.

**Hermogenes** (fl. A.D. 170), Gk. rhetorician of Tarsus, Cilicia. At the age of fifteen his reputation as orator and lecturer won him the favour of Marcus Aurelius (A.D. 161–80), who soon made him public teacher of oratory. At the age of eighteen he pub. the famous *Τεχνή ῥητορικὴ* . . . long regarded as a standard work, and elaborated by many commentaries. At twenty-five he lost his intellectual faculties. See

C. Wals, *Rhetores Graeci*, 1832-36 (new ed. with commentaries by Rabe, 1882-83, 1913; L. von Spengel's ed. 1853-56; Aldus, *Rhetores*, I., II.; Philostratus, *Vitae Sophistarum*).

**Hermogenes** (fl. A.D. 168-200), here-siarch of the second century, originally a painter and pagan philosopher of the school of Zeno. Converted to Christianity, he elaborated a system attempting to unite Stoic ideas and Christian dogmas. Tertullian accused him of heresy in *Adversus Hermogenem*. See Theodoret, *Fab. Haret.* I. 19.

**Hermion** (modern *Jebel-esh-Sheikh*), mt.-ridge and culminating point, forming S. extremity of the Anti-Libanus range, Syria, on the border of Palestine, 35 m. from Damascus. Called Sirion by the Sidonians and Senir by the Amorites. The modern Arabs call it *Jebel-esh-Sheikh*, 'Old Man Mountain' or *Jebel-eth-Thel*, 'snow mount.' The crown has three peaks (c. 9160 ft. high) covered with snow for most of the year, and it towers high above the anct. city of Dan and the sources of the Jordan. The lower slopes have rich vegetation and are planted with vines and fruit-trees. Ruins of anct. temples surround it, mostly consecrated to Baal. Heb. poetry constantly mentions Mt. H.

**Hermionthis** (mod. Erment), tn. of Kena prov., Upper Egypt, on R. Nile, 8 m. from Thebes. As the anct. Egyptian 'On of the South' it was famous for its worship of the hawk-headed god Mont (Zeus) and Horus (Apollo). There are ruins of a temple of Cleopatra's time. The burial place of the sacred bulls of Mont was discovered in 1927. The modern tn. has sugar refineries, post and telegraph offices and a railway station. Pop. about 7000.

**Hermoupolis**, or *Syra* (Nea-Syros), seaport and cap. of Syros Is., Greece, 78 m. from Athens. It is the seat of the home of the cyclades, of a Gk. archbishop, and a Rom. Catholic bishop. Commercially it is next in importance to Athens, the Piræus, and Patras, its position in the Aegean making it a centre of the Levant trade. There are manufs. of flour, leather, cotton, and 'Turkish delight.' H. has an arsenal, gymnasium, theatre, and custom-house. Shipbuilding is carried on. Pop. 21,000.

**Hermisdorf**, Nieder, tn. in Silesia Poland, is 2 m. W. of Waldenpud (Walbrzych). It has coal and iron mines. Pop. 12,000.

**Hern**, Gertrude Franklin, see **ATHERTON**. **Hernandez**, José (1831-91), Argentine poet; b. at San Martín, prov. of Buenos Aires. In late 'sixties, ed. *Revista del Río de la Plata*, Buenos Aires. Follower of insurgent López Jordan, 1870-72. Many years legislator in native prov. His only considerable poem is *Martín Fierro* (1878), an epic of the Argentine.

**Hernandiaceae**, order of cotyledonous plants, closely allied to the Lauraceae (q.v.), but differing from that order in that the flowers are epigynous. It received its name from the Sp. naturalist Hernandez, who was sent to Mexico by

Philip II. There are four genera in all, and the chief of these is *Hernandia*.

**Hernani**, tn. on the Urumea, prov. of Guipuzcoa, Spain, is 8 m. S.E. of San Sebastián. It played an important part in the Carlist wars (1835-40). It contains a modern palace, and has iron mines and cotton factories. Pop. 5000.

**Herne**, tn. in Westphalia, Germany, 11 m. N.E. of Essen. It has coal mines, and iron works and is the terminus of the Rhine-Herne canal. Pop. 98,500.

**Herne**, James A. (James Ahern) (1840-1901), Amer. actor and playwright. He acted in many plays of his own, the first being *Hearts of Oak* (1878), *Drifting Apart* (1885), *The Minute Men* (1886), and *Margaret Fleming* (1890) followed, but his next great success was the rural comedy *Shore Acres*, performed at Chicago (1892), which ran for nearly six years. His last production was *Sag Harbour* (1900). See L. C. Strang, *Famous Actors of the Day in America*, 1900.

**Herne Bay**, tn. and watering-place, in the co. of Kent, England, on the estuary of the Thames, is 6 m. N.E. of Canterbury. It was founded in 1830. Canary grass, introduced by Flemish immigrants, is grown in the vicinity. Pop. 16,600.

**Herne Hill**, suburb of London, 4 m. S. of St. Paul's. The name is supposed to be derived from the herons that frequented the Effra, a riv. formerly flowing through Herne Hill. Ruskin spent the early part of his life here.

**Herne the Hunter**, traditional figure of old Eng. legend, popularly supposed to roam at midnight near an old oak, famed as 'Herne's Oak,' in Windsor Forest. The oak was thought to have been blasted by the hunter's evil spirit, and was blown down in 1803 (c. 650 years old).

**Hernia**, or *Rupture*, surgical term, signifying the protrusion of any part of the body from the cavity in which it should be contained. In popular language, a rupture means an extrusion of a portion of the contents of the abdominal cavity. A rupture may be present at birth, from the failure of closure of the cavity, as in the case of an umbilical H., when the navel is unclosed at birth. Again, ruptures may occur in early life, and are then known as infantile Hs. The opening of an infantile umbilical H. usually closes with age, the closure being generally firm and permanent. An umbilical H. may appear in fat individuals, particularly in females on account of pregnancy, and, if neglected, may attain an enormous size. Ruptures are generally due to weakness of the body wall, though they are more liable to occur in individuals who throw considerable strain on their abdominal walls, as, for example, those who do heavy work. Persons who are subject to bronchitis are apt to suffer from H., the condition being brought about by the strain of coughing. It may also be brought about at stool through excessive straining to empty the rectum, the position adopted being probably to blame. The most common form of H. occurs in the groin, through the failure of closure of the canal, i.e.

passages, in this region, or the reopening of these canals in later life. The first detectable sign of a H. is a swelling due to a bowel containing air or solid substance. Not infrequently, however, the first symptom is obstruction of the bowel. The term 'a twist of the bowel' may be due to this fact, because the twisting or blocking may occur at any moment and necessitate surgical interference. It is a common saying that a person with a rupture is in the condition of a man with a packet of gunpowder in his pocket, which may go off at any moment. The presence of a rupture may prevent admission to some forms of gov. employment, and in the case of insurance a considerably increased premium is required. In early life ruptures may close with the aid of a suitably made and fitted truss. In healthy individuals, when a truss fails to cure, operation is desirable, and if the truss cannot close the aperture, so as to retain the bowel in the abdomen, operation is necessary. As in these circumstances the operation is performed under favourable conditions, it differs from one undertaken from emergency and urgency, when the bowel is obstructed (twisted). This, the 'radical' cure, is in most cases, successful. A rupture may cause obstruction of the bowel, or the bowel may be strangulated, when a portion of its wall is gripped so tight that death of the gripped part, and of the patient, results.

Hernia (in horses), see under HORSE (DISEASES).

Hernici, It. people of Sabine origin, dwelling in auct. Latium in the Apennines between the Trerus and Lake Fucinus, about 60 m. from Rome. They made an equal alliance with the Romans in 486 B.C., remaining loyal till 362. They then rebelled, and though faithful during the Lat. revolt in 340, later joined the Samnites against the Romans, by whom they were subdued in 306 B.C. In 211 they received the rights of Rom. citizens. Anagnina was their cap. N. dwelt the Æqui and Marsi, and S. the Volsci.

Hernösand, seaport tn. of Sweden, cap. of the län of Västernorrland on the W. coast of the is. of Hernö, in the gulf of Bothnia. Pop. 12,000.

Hernö, see HERÖIC.

Hero and Leander, 'the Juliet and Romeo of the Dardanelles.' H. was the priestess of Aphrodite at Sestos. L., a beautiful youth of Abydos, saw and fell in love with her at a festival of the goddess. Guided by a lamp, L. swam across the Hellespont nightly to visit H., but one stormy night was drowned. In despair she cast herself from her tower and perished with him. The romantic poems of the Alexandrian period dealt with the tragedy.

Hero (Heron) of Alexandria: (1) Noted Gk. mathematician and writer, probably of the latter half of the first century A.D. He was especially skilled in geometry, mechanics, and pneumatics, and famous for inventing various machines and contrivances, such as 'Hero's Fountain,' a steam-engine, a water-clock, and other automata. H. discovered the formula

expressing the area of a triangle in terms of its sides—

$$\sqrt{s(s-a)(s-b)(s-c)}$$

( $a, b, c$  being the lengths of the sides,  $s$  the semi-perimeter). (2) H. the Younger (fl. seventh or tenth century A.D.), probably a Byzantine land-surveyor, or a philosopher and writer on astronomy and warfare.

Herod, or Herodes: (1) *Herod the Great* (c. 73 B.C.—4 B.C.), King of the Jews, so called from his great power and talents; became governor of Galilee in 47 B.C. After the death of Julius Caesar, he was made king of Judæa by Antony (40 B.C.), but only made himself master of Jerusalem after a prolonged siege. He rebuilt the temple with great magnificence, and erected a theatre and amphitheatre in the city, where games in honour of Augustus were celebrated. The N.T. tells how he ordered the massacre of the Innocents at Bethlehem, and of his dreadful death in 4 B.C. (Matt. II). (2) *Herod Antipas*, son of H. the Great, and appointed Tetrarch of Galilee on his father's death. He put to death St. John the Baptist because he censured H.'s marriage with his brother Philip's wife, Herodias. In A.D. 38 he tried to obtain the title of king, stimulated by the ambition of Herodias, but his nephew, Agrippa, prejudiced the Emperor Caligula's mind against him, and he was stripped of his dominions and exiled. (3) *Herod Agrippa I.*, grandson of Salome, sister of H. the Great. In A.D. 38 Caligula gave him the title of king and conferred on him the dominions of H. the Great. Thus was that H. who caused St. James to be put to death and St. Peter to be imprisoned. He died at Caesarea in A.D. 44. (4) *Herod Agrippa II.*, son of the foregoing. He was reduced to a Rom. prov. on his father's death, being too young to govern Judæa, and later was made superintendent of the temple at Jerusalem, and had the power of nominating the high priests. He lived a good deal in Jerusalem, but was driven from the city in the revolt which ended so fatally for the Jews. In the war (A.D. 67) he took the Rom. side, joining Cestius, the Rom. commander. He rendered great services to Titus during the siege of Jerusalem, and after its capture in A.D. 70 returned to Rome, where he is said to have died about A.D. 100. With him terminated the Herodian line. See O. Noldius, *History of Herod the Great*, 1764; H. Willrich, *Das Haus des Herodes*, 1928.

Herodas, or Herondas, Gk. poet of the third century B.C., belonging to the Alexandrian school. He was a writer of mimes, realistic dramatic scenes of everyday life, much in the style familiar from the celebrated *Idyll*, *Gorgo* and *Præcinæ* of Theocritus, of whom he was a younger contemporary. They are written in racy Gk. and in a curious limping metre, suitable to the talk of ordinary people, such as a schoolmaster, temple attendant, shoemaker, mistresses and their slaves, etc. Though H.'s name had long been known, fragments only had survived till the

discovery in 1891 of a papyrus MS. in El Fayum, Egypt. The mimes are vivid clean-cut sketches in dialogue, some 100 lines each in length frequently coarse but obviously drawn with unflinching realism from life. The parody of a scene in a Gk. court of law, mime II., the little servant-maid's tactful wit, mime, V., are good examples of H.'s powers. The MS. was ed. by Sir F. G. Kenyon, 1891. See also eds. by O. Crusius, 1905; by J. A. Naïm, 1904, the latter with notes introduction, etc., and verse trans. by H. Sharpley in *A Realist of the Aegean*, 1906.

**Herodes Atticus**, see ATTICUS HERODES.

**Herodian**, or **Herodianus**, Gk. historian of the third century A.D., author of a hist. of the Rom. empire from the death of Marcus Aurelius to Gordianus III., A.D. 180-238. Little is known of his life except that he held subordinate office in Rome, A.D. 203. His work is valuable as a contemporary continuation of the hist. of Dion Cassius, but his omissions, e.g. of the growth of Christianity, etc., are striking.

**Herodians**, political party of Jews, who were adherents of the Idumaeu dynasty and warm supporters of Herod the Great. In the N.T. they are mentioned with the Pharisees as being hostile to Jesus (Mark iii. 6; Matt. xxii. 6). They were also called Boethusians by the rabbis because they were friendly to the family of Boethus.

**Herodotus** (c. 484-c. 425 B.C.), Gk. historian, sometimes called the 'father of history', b. at Halicarnassus, a dependency of Persia in Asia Minor. He was the son of Lyxes and Hecae (or Dryo), and the nephew of the epic poet Panyasis, who was put to death by the Persian tyrant, Lygdamis, on a charge of treason (c. 457). About the year 464 he left Halicarnassus and travelled in Greece and in foreign countries. He visited Athens Corinth, and Thebes, and other great cities of Greece and the important is. of the archipelago. He also journeyed through Macedonia and Thrace to the shores of the Black Sea, and travelled inland to Susa, the cap. of Persia, Babylon, and then southwards to the auct. city of Tyre through Palestine to Egypt. He also visited S. Italy and Sicily, but the dates of his various journeys are quite uncertain. H. thus had a personal knowledge of the countries of which he wrote. On his travels he collected a great amount of geographical, ethnological, and archaeological knowledge, of which he made such excellent use in his hist. We know very little with certainty about the facts of his life. It is probable that he resided in the is. of Samos about 457, thus putting himself under the protection of Athens. After six or seven years he returned to Halicarnassus, and, according to Suidas, took an active part in the expulsion of Lygdamis. He became a member of the Athenian confederacy, but about 447 went to Athens in the hope that his writings would be more appreciated there than they had been in his native place. In 445 he was voted a sum of ten talents (£2400) as an acknowledgment of his genius. In 443 he assisted in the foundation of the

Athenian colony of Thurii, of which he became a citizen, and where he probably died. The early books of his hist. describe the rise and growth of the two kingdoms of Greece and Persia. Books V. to IX. relate the hist. of the two great wars of the Persian invasion. His style is very discursive, and he expatiates with great charm on the climate and geographical features of the various countries he touches upon, as well as upon the manners and customs of the strange people who inhabit them. His hist. has always been praised for its style, which owes its attraction partly, no doubt, to the fact that it was written primarily for recitation. Its voracity has not infrequently been questioned. With regard to auct. hist. he was no doubt very credulous, but his account of the two Persian wars is accepted as the great authoritative version by all modern historians. He was very diligent in collecting materials for the early part of his hist., but lacked judgment. This hist. was first trans. into Eng. by Littlebury in 1737. Canon Rawlinson's trans., 1858-60, has many valuable annotations. The best eds. of the text are those of H. Stein, 1869-71, A. H. Sayce, 1883; R. W. Macan, *Herodotus*, (iv.-vi., 1895; vii.-ix., 1908); O. Hude, 1908; and A. Godley (with Eng. trans.), 1921-24. See J. Rennell, *Geography of Herodotus*, 1800; J. B. Bury, *Ancient Greek Historians*, 1908; W. How and J. Wells, *A Commentary on Herodotus*, 1912; and A. W. Lawrence, *Herodotus: Rawlinson's Translations, Revised and Annotated*, 1936; J. E. Powell, *Herodotus*, 1939, 1949.

**Heroic**, having the qualities of a hero. In classical mythology a hero was something between a god and a man, not quite equal to the former, but raised above the latter by his superior strength, courage, and intelligence. The qualities that go to make a hero may be divided into two classes, the physical and meta-physical. In auct. times the former alone were taken into account; a man who possessed great physical strength and courage coupled with daring and determination was H., whether in other respects he was good or bad, so that in older times the majority of heroes were warriors. In later times it came to be understood that certain other qualities also went to the making of heroes, and moral courage and integrity were held to be the attributes of heroes equally with physical courage and daring. So that on one hand we have the heroes who have won the coveted title by their superior physical qualities, their courage, fortitude, and daring, and on the other, those who may be devoid of all the great physical qualities, but who possess moral courage, fortitude, and determination beyond their fellows, and who are equally, if not more, worthy of the title.

**Heroic Play**, The, critical term, originating in Dryden, applied to the tragedy of the Restoration period. The chief characteristics of the heroic drama are strict observance of the unities, and careful adaptation of Fr. models, largely from Corneille and Molière. It has a marked

tendency to long rhetorical and declamatory speeches, and its vehicle is the heroic couplet. The link with the Elizabethan drama is Davenant, whose *Albion* (1629) possesses all the characteristics of the heroic drama except the heroic couplet. In his preface to the *Conquest of Granada*, 1670, Dryden asserts that 'an heroic play ought to be an imitation in little of an heroic poem, and consequently that love and valour ought to be the subject of it.' Dryden was the chief exponent of the H. P., which had its vogue between 1660 and 1680. His chief plays of this sort are: *The Indian Queen* (1661), *Tyrannic Love or the Royal Martyr* (1669), *The Conquest of Granada* (1670), and *Aurungzebe* (1675). In the last-mentioned play, Dryden confessed himself 'weary of his long-loved mistress, Rhyme,' and henceforth devoted himself to blank-verse tragedy. In 1671 the duke of Buckingham and other wits had parodied the H. P. in a delightful burlesque, *The Rehearsal*. Heroics, however, still flourished, until the great craftsman, Dryden, deserted rhyme for blank verse. Nevertheless, the H. P. had not entirely disappeared by the end of the century. See J. Maidment and W. Lozan, *Dramatists of the Restoration*, 1873, and W. Ker, *Essays of John Dryden*, 1900.

**Heroic Verse**, in prosody, is applied to rhymed iambic couplets, often called heroic couplets. It was first used by Chaucer in the *Legend of Good Women*. It attained its most polished form with Dryden and Pope, but has since been used with great freedom by Byron, Keats, Swinburne, and others.

**Heroin**, or **Diacetylmorphine**, drug obtained from morphine and administered by injection. Acts in much the same way as morphine, but on account of its special influences on the nervous system of the breathing apparatus it is used to relieve paroxysms of coughing. The drug habit is sometimes so acquired. In 1931 the Conference on the Control of Narcotic Drugs drew attention to the highly dangerous character of H. as a drug of addiction, and the Permanent Opium Board in 1949 pub. a report which noted 'an alarming increase' in its use.

**Herold**, Louis Joseph Ferdinand (1791-1833), Fr. musician and composer, b. in Paris, son of an accomplished pianist (a pupil of C. P. E. Bach). He studied at the Paris Conservatory, under Mehul, and in 1812 gained the Grand Prix de Rome with a cantata, *La Duchesse de la villure*. He then went to Italy and also visited Vienna. His first opera was *La Gioconda di Enrico V.*, first produced at Naples (1815) with moderate success. In Paris he collaborated with Boieldieu in writing an opera entitled *Charles de France*. His first Fr. opera was *Les Rosieres* (1817) which had a good reception. This was followed by many other works, of which the best known are: *Zampa* (1831), which was immensely successful in France and also in Germany, where it is considered his masterpiece; and *Le Pré aux Clercs* (1832), a graceful and lively work. Other works include the operas *La Clochette*

(1817) and *Marie* (1820); and the ballets *La Fille mal gardée* (1828) and *La Belle au bois dormant*. See B. Jouvin, *Héroid, sa vie et ses œuvres*, 1868.

**Heron**, name given to the species of ciconiiform birds belonging to the family Ardeidae; they are characterised by long necks and legs, slender bodies, and beautiful plumage. They frequent lakes, fens, and the mud-flats found on sandy shores, where they wade into the water and often stand ankle-deep for a considerable time, searching for prey; they capture fish, molluscs, worms, etc., by spearing them with their long bill, and their appetite seems insatiable. Hs. nest on trees, bushes, ivy-covered rocks, or reeds, making a loose fabric of sticks lined with grass, leaves, etc.; they lay greenish or drab-coloured eggs, varying in number from two to seven with the different species. *Ardea* is the largest genus, and its distribution is worldwide; *A. cinerea*, the common European H., is found also in Africa, Asia, Japan, and Australia; white Hs., or egrets, are generally smaller than other species, *A. garzetta* being the smallest of all; this beautiful bird, which is called the little egret, has long filamentous plumes and two lengthened crest feathers, which are said to be temporarily lost after breeding; this species is occasionally found in Britain; *A. alba*, the great white H., ranges from Central Europe to Africa and Asia; *A. occidentalis*, the white H. of Florida, is an even larger bird; *A. goliath*, probably the largest of all species, has a reddish head, neck, and under-surface. The genus *Nycticorax*, or night Hs., are remarkable for the long, occipital feathers, blackish or white in colour, which are lost for a time after breeding; the species vary greatly in colouring, *N. griseus*, which occasionally visits Brit. shores, being greenish-black. *Polarus*, the bitterns, and *Balanicaps*, the snobills, belong to the same family as Hs.

**Heron**, **Boatbilled**, see **BOATHILL**.

**Herondas**, see **HERONAS**.

**Herophilus** (335-280 B.C.), physician, who was founder of one of the earliest schools of medicine in Alexandria. He was a Gk. of Chalcedon and a follower of Hippocrates, and was famous for his researches in anatomy, though he seems to have been equally killed in the use of drugs. See C. F. Marx, *Herophilus*, 1838.

**Herostratus**, Ephesian, who so hungered for notoriety that on the night of the birth of Alexander the Great (356 B.C.) he set fire to the temple of Artemis at Ephesus.

**Herpes**, see **SINGLEES**.

**Herpetology** (Gk. *ἑρπῆς*, a reptile, and *λόγος*, speak), science which treats of reptiles, their habits, structure, and distribution; it is sometimes extended to include certain amphibians, such as the Batrachia. See also **UNDER REPTILES**.

**Herpeton**, see **ERPETON**.

**Herrera**, vil. in the dist. of Estape and prov. of Seville, Spain. Pop. 5900.

**Herrera**, Fernando de (c. 1534-97). Sp. lyrical poet, known as *El Divino* (the Divine), b. at Seville. He had a profound admiration for the It. poets and took a



large share in introducing their metrical systems into Spain. His odes, especially those on the Battle of Lepanto and Don John of Austria, and his elegies on King Sebastian of Portugal and Sir Thomas More, are marked by grandeur, melody, and profundity, and entitle him to rank as the greatest of Andalusian poets. All his works are printed in the *Biblioteca de autores españoles*, xxxii. See A. Lasso de Vega, *Historia de la Escuela Poética Sevillana*, 1876, A. Morel Fatio, *L'Hymne sur Lepante*, 1893, and R. Marín, *El Divino Herrera y la Condesa de Gelves*, 1911.

**Herrera, Francisco de** (1576-1656), surnamed *El Viejo* (the Elder), Sp. historical and fresco painter, b. in Seville. He was a man of such violent temper and coarse manners that neither his children nor pupils would remain with him, although both his son and Velasquez learnt from him his energy of design and bold, vigorous touch. His skill as a worker in bronze led to his being accused of coining false money, and he sought refuge in the Jesuits' College, Seville, which he adorned with his celebrated 'St. Hermengild in Glory,' and which won him the pardon of Philip IV.

**Herrera, Francisco** (1622-85), surnamed *El Mozo* (the Younger), to distinguish him from his father 'El Viejo,' b. at Seville, from which he fled to Rome on account of his father's cruelty. He became renowned for his pictures of still life, flowers, fruit, and fish. He also painted frescoes, and, in later life, portraits. On his return to Seville he became sub-director of its academy under Murillo (1660). His best picture is, perhaps, the 'San Francisco' in Seville Cathedral. His 'Assumption of the Virgin' in the Atocha church in Madrid, won for him the title of painter to the king.

**Herrera y Tordesillas, Antonio de** (1519-1625), Sp. historian, b. at Cuellar, Segovia, Spain. He became secretary to Vespasian Gonzaga, who commended him to Philip II. of Spain, by whom Herrera was appointed historiographer of the Indies and of Castile. His most valuable work is *Historia general de los hechos de los Castellanos en las islas y tierra firme del Mar Océano* (Madrid, 1601-15, trans. into Eng., 1740). He also wrote *Historia general del mundo del tiempo del Señor Rey Don Felipe II.* (1601-02). See W. N. Prescott, *Conquest of Mexico*, ii., 1843 and E. Fueter, *Geschichte der Historiographie*, 1936.

**Herrera**, see LA UNION.

**Herreros**, see HERERO.

**Herrick, Robert** (1591-1674), Eng. poet, b. in Chappide, London, was the son of a London goldsmith. In 1607 he was apprenticed to his uncle, one of the richest goldsmiths of the time, and during his apprenticeship joined the band of poets and wits who surrounded Ben Jonson. In 1614 he was entered as a fellow-commoner of St. John's College, Cambridge, and subsequently removed to Trinity Hall and took his degree of Bachelor of Arts in 1617 and of Master of Arts in 1620. Returned to London for a short time to resume the life of a fashionable

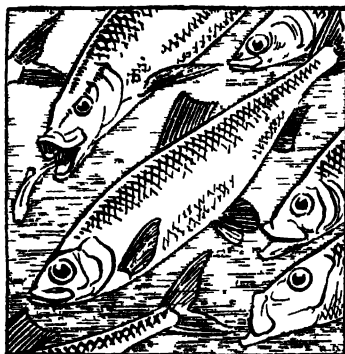
wit about court or in the Mermaid Tavern (q.v.). Some time before 1627 he must have taken holy orders for in that year he sailed as chaplain to the expedition to the Isle de Rhé. From 1629 to 1648 he was vicar of Dean Prior, near Totnes, Devonshire, where he wrote his immortal lyrics of the countryside and rural customs. He was ejected by the Puritans, but returned to Dean Prior in 1662 and died there. Some poems of his were pub. in 1635, but it was not until 1648 that he pub. the *Hesperides: or the Works both Humane and Divine of Robert Herrick*. His 'divine' poems ring less true than the 'human' ones, which, written partly under the influence of Ben Jonson, but chiefly modelled on the pagan poets, possess an exquisite lyric quality, and place him at the head of Eng. pastoral lyricists. Among his most famous lyrics may be mentioned 'Bid me to live,' 'Gather ye Rosebuds' and 'Cherry Ripe.' The most delightful of hedonistic clerics, H. loved to represent himself as a Rom. priest uttering orisons to Jove or paying vows to Mars and Neptune and adding to this conceit, a company of mistresses who, when occasion demands, don the chaplet of priestesses and bury him with due classic rites. H.'s poetry reflects the frank hilarity of the Golden Age unpreoccupied with desire and therefore unafraid of it (John Buchan). He is happiest in themes which admit of quasi-classical treatment but his religious verse for the most part is inferior to that of Herbert and Henry Vaughan. Complete works ed. by W. G. Hazlitt, 1869, 1890; collected poems ed. by G. Saintsbury, 1903; L. Magnus, 1899; F. W. Moorman, 1915, 1921; and H. Wolfe, 1928. See F. W. Moorman, *Robert Herrick*, 1910; L. Mandel, *Robert Herrick, the Last Elizabethan*, 1927; E. Blundon, 'Herrick,' in *Twelve Tablets*, 1931; E. L. M. Easton, *Youth Immortal*, 1931; *A Life of Robert Herrick*, 1936.

**Herricks, Sir John Maxwell**, fourth Baron (c. 1512-83), Scottish politician, was the second son of Robert, fourth Lord Maxwell. In early life he was a supporter of the Reformed party and a friend of John Knox, but in 1566 he cast in his lot with Mary and joined her at Dunbar. He led her cavalry at Langside (see Sir Walter Scott's *Abbot*) and rode with her into England in 1568. On his return to Scotland he laboured in Mary's cause and was imprisoned by the Regent Murray. In 1578 he was concerned in the plot for depriving Morton of the regency, and after Morton's death in 1581 was closely allied with the Regent Lennox in his schemes for Mary's release. For his own version of his political conduct see his *Historical Memoirs* printed by the Abbotsford Club in 1836.

**Herrin**, post tn., Williamson co., Illinois, U.S.A., 7 m. N.W. of Marion. It is served by three railways, has coal mines, foundries, saw mills, a powder plant and machine shops. Agriculture and dairying are also carried on. Pop. 9300.

**Herring** (*Clupea harengus*), fish which resembles the pilchard both in habits and in shape, but which is found further N.

In size it is moderately small, and has thin, silvery scales which do not extend to the head, small teeth and open gills. It has only one dorsal fin and one short ventral, and there are no spines in the fins. It keeps close to the surface of the sea, swimming high in the water. The lower edge of the H. is flattened, and covered with bony plates varyingly sharp or serrated. It feeds like the whale by straining the water through its long gill-rakers, which form a dovetailed screen



capable of arresting the copepoda. It deposits its eggs on the bottom, which hatch out adhering in masses to stones and weeds. Its colour varies between a not very pronounced green and blue, and its scales detach when the fish is roughly handled. It is a coldwater fish, and develops to a larger size in more N. lat. In the Channel it averages 12 in.; in parts of the N. Sea it reaches a length of 17 in. Those caught off the Brit. Isles are smaller than those caught off Iceland, these latter being large and coarse. Hs. are usually caught by drift-nets, but the hook and line is sometimes used, and the 'jigger' is often employed on the Scottish coast. Hs. take about two years to reach maturity, their silvery scales appearing when they have grown to a length of about 1' in. The number of eggs deposited by the female varies from 20,000 to 50,000, and the eggs are opaque and have a thick adhesive envelope. This fish is found in large quantities off the shores of the Brit. Isles, as well as along the E. border of N. America, up to the coast of Behring Strait, and is known in the White Sea of Russia and down the coasts of Norway and Denmark, and in the sea of Japan, but it is not found in the Mediterranean. It is essentially a migratory fish, never remaining in any dist. for more than a few days, and is not influenced in this by latitude or climate, for often it is earliest in the further N., and in others the reverse. The spawn is shed twice in the year, of which that of the autumn is the

more conspicuous; but the season of either of these is often extended or delayed beyond the regular time. Hence, great vigilance, patience, and skill are needed in the capture of this fish. Hs. formed an important source of income in ancient times, and have been used as food from time immemorial. The H. is rich in easily digestible oil: factories have been estab. for its extraction and preparation for human use. See also FISHFRIES, SEA.

Herring-bone, term used in architecture to describe an arrangement by which bricks, stones, wood-blocks, etc., are laid diagonally. Generally speaking, the members all make an angle of forty-five degrees with the general direction of the row, and are at right angles to the members of the row next to them.

Herriot, Edouard, fr. statesman; b. 1872, at Troyes (Aube). Prof. of rhetoric at Nantes; then at Lyons—where he became councillor, 1901; mayor from 1905 (frequently re-chosen). In 1910, councillor for dept. of Rhône; in 1912, senator. Led radical-socialist party. Premier, May 1921 till April 1925. Elected president of Chamber of Deputies. Secured defeat of Briand Gov., July 1926; formed a ministry that lasted two days, and fell on account of an acute crisis in Treasury. Entered new ministry, formed by Poincaré, as minister of public instruction, but in 1928 his party compelled him to withdraw. In 1932 he was again Prime Minister, and from 1934 to 1936 minister without portfolio; in 1935 he left the Radical-Socialist Party, but was re-elected in 1935. H. was president of the Chamber 1936-40. He was deported by the Gers in 1943. In 1946 he was again elected president of the chamber. Works: *Philon le Jusf* (1897, crowned by Academy); *Mme. Récamier et Ses Amis* (1904); *Précis de l'Histoire des Lettres Françaises* (1905); *L'agr* (1917); *Créer* (1919); *La Russie nouvelle* (1922); *La Forêt Normande* (1925); *Lyons n'est plus*, 1792-96 (Lyons during the Fr. Revolution 1927-1940); *Sous l'Oliver* (1930); *The Well-springs of Liberty* (1946).

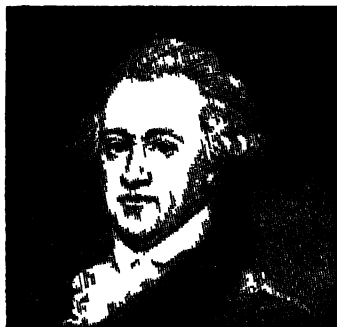
Herrnhut, tn. in Saxony, Germany, 18 m. S.E. of Bautzen. It is chiefly noted as the headquarters of the 'Herrnhuter', a branch of the Moravian Brethren, founded here in 1722. Before the Second World War, in which it suffered great destruction, it had manufs. of linen, paper, and tobacco. Pop. 1500.

Herschel, vil. and dist. in Cape Prov., S. Africa, the vil. lying 30 m. E.N.E. of Aliwal N. The dist. has an area of about 800 sq. m. and is bounded on the N. by the Orange R. Pop. 40,000 (white pop. 50).

Herschel, Caroline Lucretia (1750-1848), sister of Sir Wm. H., whom she assisted in his astronomical observations, b. in Hanover. She lived with her brother at Bath from 1772, and acted as his assistant when he was appointed astronomer-royal. Between 1780-97 she discovered eight comets, five undoubtedly unobserved before, and many of the smaller nebulae and star clusters included in her brother's catalogue were her discoveries. In 1798

she pub. for the Royal Society *Catalogue of Five Hundred and Sixty-one Stars observed by Flamsteed*. In 1728 the Astronomical Society awarded her their gold medal, and elected her an honorary member in 1835. When her brother Wm died she returned to Hanover and began, at the age of seventy-five, to catalogue all the heavenly bodies observed by him. See Mrs John Herschel, *Memoir and Correspondence of Caroline Herschel*, 1876.

Herschel, Sir John Frederick William (1792-1871), Eng astronomer, son of Sir Wm II, b at Slough, Buckinghamshire, and educated at Eton and St John's College, Cambridge, where he graduated as senior wrangler and Smith's prizeman in 1813. He entered his name at Lincoln's Inn in 1814, but took up astronomy in 1816, when he trans S K Lacroix's *Elementary Treatise on the Differential Calculus*, with an appendix on 'Finite Differences', succeeded by two vols of *Examples* in 1820. In 1821 he was appointed Copley medalist by the Royal Society. From 1825 to 1833 he was engaged, with Sir James South, in revising the nebulae and star clusters of his father's catalogues. In 1834 he estab an observatory at Field House, near Cape Town, where he spent four years in a review of the S heavens, the results of which were pub in 1847 as *Results of Astronomical Observations made at the Cape of Good Hope*, etc, one of the most important astronomical works of the nineteenth century. He was appointed master of the Mint from 1830 to 1855. He was the inventor of various astronomical instruments, sensitised paper and the use of hyposulphite of soda for fixing in photography, and he made valuable researches on the undulatory theory of light. His miscellaneous essays were pub in 1857, and *Familiar Lectures on Scientific Subjects* in 1867.



SIR WILLIAM HERSCHEL

Engraved by J. Scriven from a crayon drawn by J. Ross II

Herschel, Sir William (1738-1822), Eng astronomer, b. in Hanover. He was educated as a professional musician, and when

he came to England in 1757 taught music in Leeds, Halifax, and other N tns. In 1766 he was appointed organist at the Octagon Chapel, Bath. At Bath he turned his attention to astronomy, and, with the aid of his sister and a new telescope which he constructed for himself, began his survey of the heavens. In 1781 he discovered a new planet, the Georgium Sidus (since called Uranus), and sev. of its satellites. In 1782 he was appointed private astronomer to George III, and went to live at Slough, where he continued the observations, discovering two of the satellites of Saturn, the phenomenon of the motion of the double stars round one another, the periods of rotation of Saturn and Venus, the constitution of nebulae, and much interesting matter about the Milky Way. In 1783 he pub his *Motion of the Solar System in Space*. He received the Copley medal in 1781. In 1789 he erected his famous telescope of 40 ft. focal length and 4 ft. aperture. See L S. Holden, *William Herschel his Life and Work*, 1884; J. Sims, *William Herschel and his Work*, 1900; J. L. E. Dreyer, *A Short Account of Sir William Herschel's Life and Work*, 1912.

Herschell, Sir Farrer Herschell, Baron (1837-99), lord high chancellor of Great Britain, b at Brampton, Hampshire. In 1860 he was called to the Bar and joined the N circuit, in 1872 he was made Queen's Counsel. He was recorder of Carlisle (1873-80), member of parliament for Durham (1874-85), and Solicitor General (1880-85). In 1886 he was lord chancellor for six months, falling with Gladstone's administration in that year, but returning to the Woolsack with the Liberal administration (1892-95). He was appointed a member of the Anglo-Venezuelan Arbitration Commission in 1898, but while at Washington met with an accident which proved fatal. See J B Altev, *The Victorian Chancellors*, 1906-08.

Hersfeld, Bad, tn in Hessen, Germany, on the River Fulda, 24 m NNE of Fulda. It was famous for its Benedictine abbey founded by Lullus, 763 AD, and secularised in 1644. It is noted for manufs of cloth, leather, and machinery. Saline springs are found here. Pop. 1,400.

Herstal, tn of Belgium and suburb of Liège, 4 m to the NE of that city, on the Vesdre. It is the seat of the Belgian small arms factory and cannon foundry, and has coal mines, manufs of iron and steel. It is the reputed bp of Pepin le Gros. It also claims to be the bp of Charlemagne. Pop. 27,200.

Herstmonceaux, see HURSTMONCEAUX.

Herten, tn, Westphalia, Germany, 15 m WNW of Dortmund. Pop. 35,000.

Hertford ('ford of harts'), municipal bor and co tn of Hertfordshire, is situated on the R Lea about 21 m N of London and 2 m from Ware. It is essentially an agrk tn, and is noted for its corn mkt, but it has no manufs of importance. The 'harts ford' is probably the origin of the name of this tn, and in Saxon times it was a place of importance. It was reduced by the Danes sev times,

and the wall of the castle built by Edward the Elder still remains. Haileybury College, founded in 1806 by the E. India Company as a training school for its civil service, and which is now a public school, is situated 2 m. from this tn. Pop. 13,800.

**Hertford College, Oxford**, in its present form is a modern foundation. Between 1283 and 1300 Elias of Hertford acquired one of sev. halls which stood on the site and which became known as Hart Hall. In 1312 it was bought by Bishop Stapleton, the founder of Exeter College, on which college it was dependent until the second half of the sixteenth century. In 1710 Richard Newton became principal and, in spite of strenuous opposition, succeeded in obtaining a charter to estab. Hertford as a college in 1740. It lapsed in 1803 and the buildings were acquired by Magdalen Hall, which was itself dissolved in 1874, when its principal and scholars were incorporated as part of the new Hertford College.

**Hertfordshire**, or **Herts**, inland co. of England, bounded on the N. by Cambridgeshire, on the E. by Essex, on the S. by Middlesex and on the W. by Buckinghamshire and Bedfordshire. The surface is hilly, but there are some fine pasture lands and picturesque parks and woods. It belongs mainly to the Upper Cretaceous rocks, which give place in the S. to the London clay. The prin. rivs. are the Lea, the Colne, and the Wel, and the Grand Junction Canal passes through a part of the co. The chief industry is agriculture, and in addition to grain of a choice quality, hay, vegetables and numerous fruits are grown for the London mkt. There are a few manu., straw-plait, silk and paper, together with brewing, tanning, parchment-making, brick, tile, earthenware making, being the chief. The only mineral of importance is brick-earth. In 896 a battle took place in this co. between Alfred and the Danes, and in the Wars of the Roses the battles of St. Albans and Barnet were fought here. It is divided into six parl. divs., Hemel Hempstead, Hitchin, Hertford, St. Albans, Watford and S.W. Herts. one member for each div. and one bor. constituency, Watford. Pop. 367,000.

**Hertha**, or **Nerthus**, in Teutonic mythology was the goddess of fertility, 'Mother Earth.' Tacitus describes her worship, the chief seat of which has not been identified.

**Hertling, Georg Friedrich**, Count von (1843-1919), Ger. Chancellor; b. at Darmstadt; son of Jakob, Baron von H. Began as an ultramontane teacher at Bonn; Extraordinary Prof. of Philosophy, 1880; Ordinary Prof., 1882. He was by that time a member of the Reichstag, and he ultimately became leader of the R.C. Centre Party. When Michels was dismissed the Chancellorship, Kaiser Wilhelm made H. Chancellor, Nov. 1, 1917. His period of office covered Germany's most successful time in the First World War. He resigned Sept. 30, 1918. Wrote sev. philosophic works of a Neo-Thomist kind. See his autobiography, *Erinnerungen aus meinem Leben*, 1919-21, and

A. F. Eickhoff, *Hertling als Sozialpolitiker*, 1932.

**Hertogenbosch** (Bois-le-Duc), city of Holland, cap. of the prov. of N. Brabant, situated at the confluence of the Aa and Dommel, 28 m. S.S.E. of Utrecht. The city is well built and is crossed by sev. canals. In St. John's church (founded in the early fourteenth century) H. has one of the finest medieval churches in Holland. There are sev. other churches, a fine tn.-hall, an episcopal palace, a court-house and gov. buildings which were formerly a monastery. H. had its origins as a hunting-lodge of the dukes of Brabant, it gradually increased in importance and in 1154 was raised to the status of a tn. and fortified with walls. In the mid-fifteenth century it was considerably enlarged. Numerous abortive attempts were made by the Netherlands to get possession of the tn. in the sixteenth and seventeenth centuries, but at length in 1629 it was taken after a five-months' siege. It fell to France in 1794; to the Prussians in 1814; and after Ger. occupation in the Second World War, to the British forces in the autumn of 1941. Pop. 53,000.

**Hertwig, Oskar** (1819-1922), Ger. anatomist and embryologist; b. at Friedberg in Hesse. Prof. of anatomy, Jena, 1878; at Berlin, 1888. In 1876 pub. *Beiträge zur Kenntnis der Bildung, Befruchtung und Theilung des tierischen Eies*, which for the first time explained the mechanism of fertilisation. His other works include: *Die Zelle und die Gierthe* (1893-1895), and *Zeit- und Streitfragen der Biologie* (1894-97).

**Hertz, Heinrich Rudolf** (1857-91), Ger. physicist, b. at Hamburg. He was intended for the profession of engineering, but deserted it to study experimental and mathematical physics under Von Helmholtz in Berlin. For the best solution of the problem of electric inertia he won the univ. prize, his paper, *Kinetic Energy of Electricity in Motion*, being pub. in 1880. In 1883 he was privat dozent (or adv. teacher not belonging to the professional staff) at Kiel, and from 1885 to 1889 prof. of physics in the Karlsruhe Polytechnic where he made his remarkable experiments on electric waves based on Maxwell's theory of electricity and magnetism, for which the experimental proofs had been lacking hitherto. The result of his experiments was to prove beyond a doubt that ordinary light consists of electrical vibrations in an all-pervading ether which possesses the properties of an insulator and of a magnetic medium (*Hertzian Electric-Magnetic Waves*). The apparatus which he invented for the purpose was an electric resonator which could pick out and make evident the oscillations of electric discharges which take place under certain conditions, as demonstrated by Kelvin. Having proved that these electric waves existed, he proceeded to show that they could be reflected, refracted, polarised, and diffracted just as light is, and he measured the velocity of propagation and found it to be of the same order as that of light and of radiant heat. The results of his observations have been employed for

the practical purposes of signalling over considerable distance (see *WIRELESS TELEGRAPHY*). His papers have been trans. into Eng. by Prof. D. E. Jones, and pub. as *Electric Waves* (1893), *Miscellaneous Papers* (1896), and *Principles of Mechanics* (1899). See Sir O. Lodge, *Hertz and his Work*, 1895.

Hertz, Henrik (1798-1870), Dan. poet, b. of Jewish parents at Copenhagen. He passed his final examination in law in 1825, but the literary instinct in him was too strong, and in 1826 he pub. his first play. His *Amor's Strokes of Genius* (1830), a comedy in rhymed verse, was a complete novelty in Dan. literature, and his *Gengangerbreve* (Letters from a Ghost, pub. in the same year) is one of the best satires in Dan. His romantic national drama, *Scend Dyrings His* (1837), is one of his finest works, while *Kong Rens Datter* (1845) has been trans. into almost every European language (Eng. trans. 1850 by Sir Theodore Martin). His comedy, *Fyltedagen*, appeared in 1828, and his beautiful lyrics were collected in 1857-62. His *Dramatic Works* (18 vols.) were pub. 1854-73. See monograph by H. Kyrré, 1916.

Hertz, Joseph Herman (1872-1946), Jewish chief rabbi; b. at Hebrin in Czechoslovakia (then in Hungary); son of Simon H., Hebraist. Emigrated as a child to Amer. He was educated at the College of the City of New York, Columbia Univ. (Ph.D.), and the Jewish Theological Seminary, New York. Rabbi of the Congregation Adath Jeshurun at Syracuse, New York, 1894-98. Then he became rabbi of Witwatersrand Old Heb. Congregation, Johannesburg, Transvaal. From 1906-08 he was prof. of philosophy at the Transvaal Univ. College. Expelled by Boers as pro-Brit. during S. African war; returned when Brit. were in occupation. In 1913 became chief rabbi for the Brit. Empire. In Zionism H. belonged to the *Mizrachi* or orthodox party; and he was president of the *Mizrachi* Federation of Great Britain and Ireland. A consistent Zionist he was, however, never prominent in the movement, but as an Anglo-Jewish leader he was consulted by the Gov. when the Balfour Declaration (q.v.), was in preparation. Of his many writings that which will endure the longest is probably his anthology, *Book of Jewish Thoughts*, compiled for Jewish sailors and soldiers in the 1914-18 war, (the 21st ed. being pub. in the 1939-45 war). Also his trans. and commentary on the Pentateuch with portions from the Prophets will also last. Other works include: *The Ritual System of James Martineau* (1894), *Backya, the Jewish Thomas a Kempis* (1898), *The Jew as a Patriot* (Johannesburg, 1898), *The Jew in South Africa* (1903), *The 'Strange Fire' of Schiam* (1914), *Affirmations of Judaism* (1927), *Ancient Semitic Codes and the Mosaic Legislation* (1928), *Battle for the Sabbath of Genera* (1932).

Hertzberg, Ewald Friedrich, Count (1785-95), Prussian statesman; b. at Lottin, Farther Pomerania, of noble family. In 1763 he became secretary of

state for Foreign Affairs. He made the treaty of peace with Russia and Sweden in 1762, and carried out many other important negotiations—including a treaty with the U.S.A., 1785. His policy was anti-Austrian, and he favoured limited monarchy. Few were more constantly attendant on Frederick the Great during his last days. Frederick Wm. II., on his accession, made H. a count, Sept. 1786; but H. disagreed with the king's policy, and was dismissed in 1791. H. was exceedingly crude—wrote on hist., statistics, and political systems; and from 1786 was curator of the Academy, to which he endeavoured to give a more Ger. character.

Hertzog, James Barry Munnick (1866-1912), S. African general and statesman, b. at Wellington, Cape Province, son of a farmer. Educated at Victoria College, Stellenbosch, and at Amsterdam Univ. Became an advocate at Bloemfontein; judge of the Orange Free State, 1895. Commanded Boer forces of S.W. div., S. African war, 1899-1902, and, on behalf of the Free State, was one of the signatories of the treaty of Vereeniging, 1902.



Zadik's Studios

GENERAL HERTZOG

On the grant of responsible gov. to the two ex-republics in 1906, he became the political leader of the Dutch in the Free State and was always very slow in becoming reconciled to Brit. rule. As minister of justice in the first gov. of the Union of S. Africa, his bitter speeches steadily fanned the embers of racialism, and he vehemently opposed all schemes of immigration and Brit. settlement. In 1912 Botha, who had pursued a policy of reconciliation with Britain, reconstructed his cabinet and omitted H. Henceforth it was an open feud—Botha and Smuts versus H., and the Free State to a man supported H., who now launched the new

Nationalist Party there with secession from the Empire as its main plank. In 1914-18 he stood out against co-operation with Britain, but, being convinced of the impracticability of rebellion, he tried to induce De Wet and Beyers to abstain from it. In the election of 1924 the Nationalist-Labour alliance defeated the rival combination led by Smuts and H. became Prime Minister and minister of native affairs. But he now seemed to have abandoned secession though he declared that the sole link between the Dominions and Great Britain was the personal bond of a common king—a declaration which he signed at the Imperial Conference of 1926. His chief concern in office was now to advance the controversial policy of 'segregation' of the natives and to this period belongs the Nationalist determination to eliminate the Union Jack as the national flag of S. Africa. In 1929 he was returned again with a small majority over all other parties and in 1930 attended the Imperial Conference of that year, declaring on his return that he had now 'done with a republic and republicanism.' He was again in London for the celebration of the silver jubilee of King George V. In 1933, as leader of the Nationalists, he joined forces with Gen. Smuts, leader of the S. African Party, to form a United Party, and his utterances gave the impression that he would stand with the empire in the event of war; but in 1939, when war broke out, H., as Prime Minister, declared for neutrality. He was, however, defeated on a vote of confidence and resigned in favour of Smuts. From that moment his career waned. He now, however, tried to justify Nazi policy and called on Smuts, in 1940, to withdraw from the war and make a separate peace. This aroused great anger in S. Africa and in Nov., 1940, he resigned from the 're-united' Nationalist Party a year after he had formed it with Dr. Malan, the new Nationalist leader and an avowed republican, and then resigned his seat in Parliament. At a meeting of the Afrikaner Party in Johannesburg in 1941 he stated that National Socialism was the only solution of S. Africa's economic and political problems, but Havenga, leader of the Afrikaner Party, opposed his view and there was an open break between the two men which finally ended his career. In spite of his later support of the Brit. Commonwealth and the favourable impression he made at the Imperial Conferences of 1926 and 1930 it was always obvious that his anti-Brit. sentiment was never far below the surface. It is a curious commentary on his prejudices that he sent one of his three sons to Oxford Univ. See lives by L. E. Neame, 1930, and C. M. Van der Hoeve, 1946.

Heruli, Teutonic tribe, first mentioned in the reign of Gallienus (260-68), when they joined the Goths in ravaging the Aegean coasts. In the sixth century they formed an alliance with Theodorik the Ostrogoth against Clovis, king of the Franks, but were overthrown by the Langobardi.

Hervieu, Paul Ernest (1867-1916), Fr. novelist and dramatist, b. at Neuilly (Seine). He was called to the Bar in 1877, and qualified for the diplomatic service. His best work is found in a series of plays, including: *Point de Lendemain* (1890), *Les Paroles Restent* (Vaudeville, 1892), *Les Tenailles* (Comédie Française, 1895), *La Course du Flambeau* (1901), *L'Enigme* (1901), *Thérèse de Méricourt* (1902), *Le Dédale* (1903), *Le Réveil* (1905), *Connais-toi* (1909). Elected to the Fr. Academy in 1900.

Herwarth von Bittenfeld, Karl Eberhard (1796-1884), Prussian general, b. at Grosswerther in Thuringia. He entered the Guard Infantry in 1811, and served through the war of Liberation (1813-15), distinguishing himself at Lützen and Paris. In 1864 in the Schleswig-Holstein campaign he attained great fame through his daring capture of the Isle of Alsén. In 1866 he commanded the 'Army of the Elbe,' which overran Saxony and invaded Bohemia. He took a leading part in the brilliant victories over the Austrians at Hühnerwasser, Münchengrätz and Königgrätz. On the outbreak of the Franco-Prussian war in 1870 he was appointed to organise the reserve forces in the Rhine prov. and in 1871 was promoted to the rank of field-marshal.

Herwegh, Georg (1817-75), Ger. lyric poet, b. at Stuttgart. Originally intended for the church, he went to the univ. of Tübingen, from which he was expelled in 1836, and he then took up journalism. During his term of military service in subordination resulted in his fleeing to Switzerland, where he pub. the book of political poems that, although it was confiscated, made him famous, *Gedichte eines Lebendigen* (1841). He pub. a second vol. of poems, which like the first was confiscated, and trans. Lamartine's works and sev. of Shakespeare's plays into Ger.

Herzegovina, see BOSNIA AND HERZEGOVINA.

Herzen, or Gerzen, Alexander (1812-1870), Russian author and publisher, b. at Moscow. In 1840 he held an official post, but in consequence of too great frankness he was sent to Novgorod in 1824, and left Russia in 1847 to pass the remainder of his life between Paris, London, and Geneva. In London he estab. his *Free Russian Press*, from which emanated a large number of works dealing with the cause of reform in Russia. He wrote *Mémoires de l'Impératrice Catherine II.* (1864), and some novels, as well as his political works. His collected Russian works were pub. at Geneva in 1870. See M. Wiedemann, *Herzen und der Kolokol*, 1935.

Herzl, Theodor (1860-1904), founder of modern political Zionism (q.v.), b. at Budapest. Most of his life was passed at Vienna, where in addition to his fame as a Jewish Nationalist, he also had a high reputation as a journalist and dramatist. His great ideal was to restore the Jewish nation to political autonomy. He treated the subject from an entirely secular standpoint, and did not at first bring Palestine

into his calculations, though his ultimate aim was to estab. the Jewish people as a nation in Palestine. He pub. his famous pamphlet, *Der Judenstaat*, in 1896, in which he set forth this ideal. See also by J. de Haas, 1927.

Herzog, Emile, see MAUROIS, ANDRÉ.

Herzog, Johann Jakob (1805-82), Ger. Protestant theologian, b. at Basle. In 1847 he was appointed prof. of theology at Halle, and from there went on to Erlangen as prof. of church hist. (1854). His most famous work was the *Realencyklopädie für protestantische Theologie und Kirche* (1853-68, 22 vols.). In 1877 he commenced a second ed. in conjunction with G. L. Plitt, and on the death of the latter in 1880 Albert Hauck took his place, and after the death of H. pub. a third ed. (1896-1909). His other works include *Johann Calvin* (1813), *Leben Okolampads* (1843), *Die romanischen Waldenser* (1853), and *Abriß der gesamten Kirchengeschichte* (3 vols., 1876-82, 2nd ed., 1890-92).

Hesban, see HESBON.

Hesdin, tn, on the Canche, in the dept. of Pas de Calais, France, was formerly fortified. It has a sixteenth-century tn. hall. The chief manufs. are brass and leather wares, and cotton. Pop. 2700.

Heslridge, Sir Arthur, see HASELRIDGE.

Heslune, Philip, see WARLOCK, PETER.

Heshbon (Modern Hesban), chief city of Sihon, king of the Amorites, captured by the Israelites on their way to the Jordan (Num. xxi.). Its site is on a plateau in the N.E. corner of the Dead Sea, on a trib. of the Jordan in Trans-Jordania.

Hesiod, or Hesiodus (fl. eighth century B.C.), earliest didactic poet of ant. Greece. He was b. at Asra, a vil. at the foot of Mt. Helicon, and was the son of a shepherd. On the death of his father, he and his brother Perseus had a law-suit over the patrimony, which the latter won by bribery, whereupon H. left his native place for Naupactus. His brother, who had wasted his substance, now applied to him for help. This incident is recorded in H.'s earliest poem, *Works and Days*, half of which contains good advice given to his erring brother, enforcing honest labour and laying down rules as to husbandry. The rest of the poem deals with lucky and unlucky days for rural work. The poem contains a beautiful description of winter and the earliest fable in Gk. literature of which we have any knowledge, 'The Hawk and the Nightingale.' In this poem, too, H. relates how at some funeral games at Chalcis in Euboea he won in a contest of song a tripod, which he dedicated to the Muses. The other poem attributed to H. is *Theogony*. It is a hist. of the creation of the world—the earth, hell, ocean, night, sun and moon, and a hist. and genealogy of the gods, originating in Zeus and Cronus. The authenticity of the poem was first doubted by Pausanias (A.D. 200); it is now generally accepted that it is the work of H., or of a disciple, and that it contains interpolations by a later hand. The *Shield of Hercules*, once thought to be H.'s, is probably spurious. It is a description of the expedition of Hercules and Iolaus against Cynus, and obviously owes much

to Homer's description of the shield of Achilles. H.'s poetry is mainly didactic, and his moral sayings were enforced on all Gk. children. See the critical eds. of G. Schömann, 1869; F. A. Paley, 1883; and C. Sittl, 1889. The *Edictio princeps* is the ed. of 1493, pub. at Milan. There are Eng. trans. by C. Elton, 1815, and A. Mair, 1908. See also J. Adam, *Religious Teachers of Greece*, 1908, and O. Gigon, *Der Ursprung der griechischen Philosophie*, 1915.

Hesione, daughter of Laomedon, king of Troy, who exposed her to a sea-monster, according to an ann. custom, to appease the wrath of Apollo and Poseidon. Hercules rescued her from the rock to which she was chained and slew the monster, claiming, as his reward, the horses given to Laomedon by Zeus. Laomedon refused to fulfil his promise and was slain by Hercules, who took Troy and gave H. to Telamon.

Hesperer, vil. of Waterloo co., Ontario, Canada, 12 m. S.E. of Berlin. It is served by the Canadian National Railway. It has woollen, flour and saw mills, and manufs. furniture and implements. Pop. 3000.

Hesperia, see HESPERUS.

Hesperides, in Gk. mythology, the maidens who guarded the golden apples which Earth gave to Hera on her marriage with Zeus. Their numbers and genealogy vary in different accounts, but they are usually supposed to be three in number, and to be the daughters of Hesperus. According to Hesiod their dwelling-place was far away to the W. on the borders of the ocean, but Apollodorus places their garden near Mt. Atlas. For the account of how Heracles outwitted the H. with their fellow guardian, the dragon Ladon, and gathered the apples, see HERACLES. See also J. C. Lawson, *Modern Greek Folklore and Ancient Greek Religion*, 1910.

Hesperornis (Gk. *esperos*, west, and *ornis*, bird), name of a genus of extinct birds belonging to the sub-order Neornithes Odontor, and found in the Upper Cretaceous strata of Kansas: they were marine diving birds of considerable size, with rudimentary wings, and a broad tail of moderate length; the sternum is broad and flat and without keel; the head small, with elongated jaws furnished with recurved teeth set in grooves. *H. regalis* stands about 3 ft. high, and *H. crassipes* is an even larger species.

Hesperus (Lat. *Vesper*), Gk. name for Venus as the evening star. Although originally they were regarded as two distinct personalities, H. was very early identified with Phosphorus (Lat. *Lucifer*), the morning star. The Gk. poets called Italy 'Hesperia,' and later writers extended the name to Spain.

Hess, Rudolf (b. 1898), Ger. National Socialist politician, b. at Alexandria, Egypt, his father was of Bavarian origin but a Lutheran. Sent to Godesberg high school showing aptitude in mathematics. In the war of 1914-18 he volunteered as a private in the 1st Bavarian Infantry regiment but later transferred to the 1st

Force where he obtained a commission. His father's business being ruined, he had no occupation after the war and drifted to a mystical anti-semitic association called 'Thule,' whose badge was the swastika and whose radical views were those of Houston Stewart Chamberlain. When the association was suppressed by the Munich communist revolutionaries, H. barely escaped with his life. In the following winter he heard, by mere chance, a passionate speech by Hitler in denunciation of the Versailles Treaty and became an ardent convert to National Socialism. He soon became the close friend and confidant of Hitler and accompanied him in the abortive 'putsch' in Munich (1923), sharing imprisonment with Hitler in Landsberg am Lech fortress. Being an educated man and of calm and self-controlled temperament he exercised great influence over the neurotic Hitler, particularly in the latter's periods of deepest dejection. It was H. who inspired the production, though not the content, of *Mein Kampf* and at Landsberg much of the work was dictated to him by Hitler. In 1928 Hitler made him his private secretary. In 1932 H. who had been appointed chairman of the Central Political Bureau of the Nazi Party, was made Deputy Leader and, logically, his apparent to Hitler. As such, he was consulted on most matters of foreign and domestic policy and probably his advice had some restraining influence on the excited nerves of his leader. But it seems that he was never allowed to go on unimportant missions and when important developments took Hitler out of the cap H. was left behind, for it was his loyalty rather than any special ability that Hitler exploited. Relations between the two men were evidently normal as late as May 4, 1941 when H. sat beside Hitler in the Reichstag session of that date. But on May 13 came the astonishing news that H. had flown in an aeroplane to Scotland, landing near Glasgow by parachute and breaking an ankle. In a long interview with Lord Simon (then Lord Chancellor) H. put before him six proposals: Germany to be given a free hand in Europe, Britain to have a free hand in the Empire, except for the return of the former German colonies, Russia was to be included in Asia, but Germany had certain demands to make of Russia, which would have to be satisfied by negotiation or as a result of war. (H. claimed that there was no truth in rumours that Hitler contemplated an early attack on the Soviet Union, which, however, was invaded 6 weeks later.) Britain was to evacuate Iraq, the peace agreement was to provide for reciprocal indemnification of Brit. and Ger nationals whose property had been expropriated as a result of the war, and the peace proposals were to be valid only if negotiated by a Brit. Gov. other than the existing one (Mr. Churchill's). The information given by H. to Lord Simon repeated what he had already told the duke of Hamilton (near whose house he came down) and Sir Ivone Kirkpatrick, of the Foreign Office. Hence the transcript of

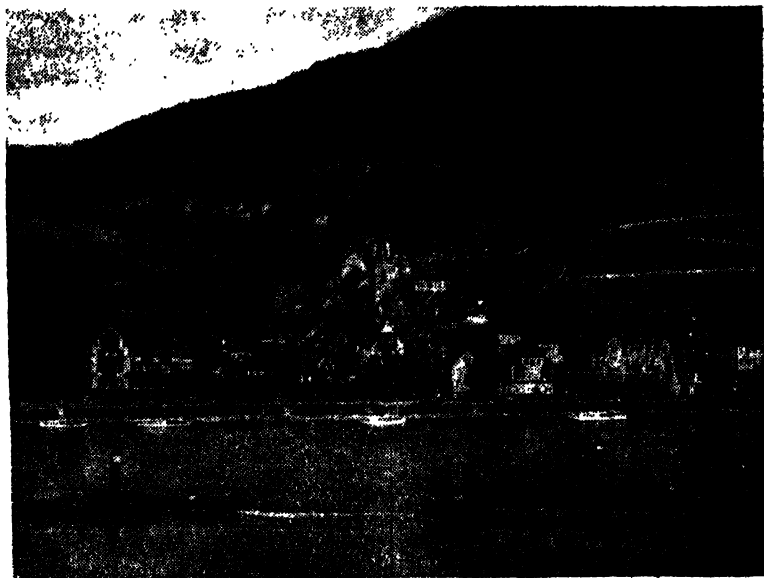
the interview with Lord Simon did not form any part of the case against H. before the War Crimes Tribunal, which was based on the records of the earlier interviews. H. was found guilty at the Nuremberg trial and sentenced to life imprisonment. During the trial he had feigned madness for a long period but afterwards abandoned the pose. See J. Rawlings, *The Case of Rudolph Hess*, 1947.

Hesse, Hermann (b 1877). Ger novelist, essayist and poet, b at Calw in Württemberg. His father and grandfather were missionaries in India. Educated at Maulbronn theological school and Cannstadt Gymnasium, from both of which he ran away he became a mechanic and a bookseller and continued his education by much reading. Lived in Switzerland, at Basle, Montagnola near Lugano, and Rome. In 1921 he adopted Swiss nationality. Married, but left his wife and three children in 1911 to make a protracted tour in India. During the First World War he was ostracised in Germany as a pacifist. His early novels with their vivid portrayal of natural scenery and small in life are reminiscent of the Swiss novelist and poet, Gottfried Keller, of whom he might seem to be the legitimate successor. These novels were remarkable for their musical prose and sympathetic portrayal of childhood which he revered as the only period of human life in which man can abandon himself to his innocent senses, live a full life and find himself. *Siddharta* is a novel containing many autobiographical hints. It describes a young man's revolt against the orthodox religious views of his father who is a mystic and his growing interest in Indian mysticism, the way to which he finds in excursions into worldly life. *Der Steppenwolf* is a severe indictment of Western twentieth-century urban life with its lack of real culture and its harsh struggles below the surface. It is a highly controversial work, full of psycho-analytic imagery. He believes, like Oswald Spengler, that the Western World is bound to go under unless it renews itself with fresh ideas from the East. He was awarded the Nobel Prize in 1946. His poetry, as musical as his prose, by turns sombre and idyllic, is also full of mystical imagery and is a modern echo of German romanticism of the great period. Above all he is the prophet of individualism. Prin. works.—Novels: *Peter Camenzind* (1904), *Unter dem Rad* (1905), *Nachbarn* (1908), *Gertrud* (1910), *Rosshalde* (1914), *Knulp* (1915), *Demian* (1919), *Siddharta* (1923), *Der Steppenwolf* (1927), *Morgenlandfahrt* (1930), *Narziss und Goldmund* (1930), *Das Glasperlenspiel* (1943). Poetry: *Gedichte* (1922, 1928–37), *Traut de Nacht* (1929), *Magnusruh* (1949); Essays: *Krieg und Frieden* (1946). See H. Ball, *Hermann Hesse*, 1927. R. Schmid *Hermann Hesse*, 1928. R. B. Matzke, *Der Dichter und die Zeitstimmung* (with special reference to *Der Steppenwolf*), 1944. Hesse, Alice Maud Mary, Grand Duchess of, see ALICE MAUD MARY. Hesse (or Hesse), previously also called Hesse-Darmstadt, state of W. Germany;



proclaimed a republic in 1918, but, later a state of the Ger. Reich. Enjoying no local autonomy, and including the provs. of Starkenburg, Rhein Hessen, and Oberhessen. In the territorial revisions of 1948, consequent upon the liquidation of the state of Prussia, was constituted a Land or state, and now includes the ter. of the former Land Hesse on the r. b. of the Rhine and the greater part of the former Prussian prov. of Hesse-Nassau. Its ter. on the l.b. of the Rhine because the new state of Rhineland-Palatinate. Ober-

mineral wealth is not great, including some salt, lignite, and iron ores, and a little copper, manganese, clay, etc. The prin. manufs. are leather goods, tobacco and cigars, chem. products, furniture, paper, railway cars, machinery, wagons, cloth, musical instruments, and sparkling wines. There were also many industrial agric. and other special institutes. George I. (1507-96) founded the line which reigned till 1918. H. became a grand duchy in 1806, and part of the Ger. empire in 1871. The H. Crown jewels were stolen from



HESSIE : ASSMANNSHAUSEN ON THE RIGHT BANK OF THE RHINE

Behind the town are vineyards, and the slopes of the Rheingau

hessen and E. Starkenburg are mountainous in character, the former having the Vogelsgebirge (chief peak Taufstein, 2530 ft.), and the latter, the Odenwald (chief peak Melibocus, 1700 ft.). W. Starkenburg is quite level, forming part of the Rhine plain. The Rhine is the prin. riv., all the others, save those rising to the N. and E. of the Vogelsgebirge, which flow into the Weser, being tribs. There are no large lakes, but mineral springs are found at Nauheim and elsewhere. Deer, foxes, and wild swine are among the fauna. The prin. industry is agriculture; wine is one of the chief natural products, being produced in the Rheingau, notably at Rudesheim, Geisenheim, and Assmannshausen, and on the W. slopes of the Odenwald. The

Kronberg Castle in 1946 by an Amer. officer of the army of occupation, but most of them were recovered in Chicago.

*Hesse-Nassau*, former prov. of Prussia, situated between the Rr. Rhine and Weser is now incorporated in H. The surface is very mountainous, the chief ranges being Taunus (highest point 2896 ft.), Westerwald, Rhongebirge (highest point 3115 ft.), and the Hessian Mts. All its rivs. are tribs. of the Rhine and Weser. Agriculture and cattle-rearing are carried on, and timber is plentiful, the chief trees being beeches, oaks, and conifers. There is considerable mineral produce, iron ore occurring in large quantities, as well as manganese ore, coal, and copper. Mineral waters are found at various places, the brine springs of Wiesbaden and the soda-

bicarbonate springs of Ems being famous; and excellent wines are produced in the Rheingau. The prin. manufs. are machinery, pottery, leather goods, iron ware, chems. and textiles, which are carried on at Kassel, Diez, Eschwege, Frankfort, Fulda, Gross Almerode, Hanau, and Hersfeld. Other tns. of importance are Wiesbaden, Homburg, and Marburg, which is the seat of a univ. The prov. was formed in 1867-68 out of the ters. of the duchy of Nassau, the landgraviate of Hesse-Homburg, the electorato of Hesse, and the ter. of Frankfort, etc.

The area of H. is 7,931 sq. m. and the pop. 4,064,000. Cap. Wiesbaden.

**Hesse-Homburg**, former landgraviate of Germany, composed of Homburg-vordere-Höhe on the r. b. and Meisenheim on the l. b. of the Rhine, with a total area of 106 sq. m. The former dist. is now part of Hesse, and the latter of Rhineland-Palatinate. H. was constituted a landgraviate in 1596 by Francis I., son of George I. of Hesse-Darmstadt. It was incorporated with latter duchy from 1806 to 1815, and again in 1866. Later in the same year it was annexed to Prussia.

**Hesse-Kassel**, or Electoral Hesse (Ger. Kurhessen), was until 1866 an electorato of Germany, but now forms part of Hesse, having been until 1916 a gov. dist. of the Prussian prov. of Hesse-Nassau. (See article on the latter for particulars as to configuration, products, etc.). When Philip the Magnanimous died in 1567, he left half of Hesse, with Kassel as cap., to his eldest son, Wm. IV., 'The Wise.' A large part of Schaumburg and other land was added after the Thirty Years war. In 1803 (under Landgravo Wm. IX.) H. was constituted an electorato, the sovereign bearing the title of electorial prince of Hesse. In 1807, however, nearly all the ters. of H. were transferred to Westphalia, but were recovered in 1813. As the Elector Frederick Wm. had taken part with Austria in the war of 1806, a Prussian army entered his dominions, and they were annexed to Prussia in Sept. of the same year.

Hessenens, see ESSENEs.

**Hesse-Rotenburg**, former landgraviate of Germany, which was founded in 1627 by Ernest, the younger son of the landgrave Maurice of Hesse-Kassel. On his death in 1693, his two sons inherited it, but in 1700 they divided the ter. and founded the families of Hesse-Rotenburg and Hesse-Wanfried. The latter died out, and the two were reunited in 1755. In 1801 part of the landgraviate was ceded to France, in 1813 some of the remainder to Prussia, and on the death of the Landgrave Victor Amadeus in 1834, what remained was re-united to Hesse-Kassel.

For the lineage, exploits, and hist. of the houses of Hesse, see Hoffmeister, *Historisch-geographisches Handbuch über alle Linien des Regentenhauses Hesse*, 1874; and Walther, *Literarische Handbuch für Geschichte und Landeskunde von Hesse*, 1821 and 1858.

**Hessian-fly**, or *Cecidomyia destructor*, name of a species of dipterous insects belonging to the family Cecidomyiidae;

they are minute fragile flies, having very few wing nervures; the elongated antennae are furnished with rings of hairs. This fly does great injury to crops, and in some parts of the world causes considerable loss when it has once attacked cereals; the larvæ is lodged at a point in the stem of the wheat enfolded by a leaf; the stem consequently weakens and bends. When about to pupate, the larvæ of *C. destructor* exudes a substance from its skin and this forms a remarkable cocoon, which is called flax-seed.

**Hess's Law**, in chem., states that the total absorption or evolution of heat in a given chemical reaction is uninfluenced by the number of stages in which the reaction is brought about. The law was first formulated in 1840 by the Russian chemist, G. II. Hess.

**Hestia** (the 'fire goddess'), daughter of Cronos and Rhea, one of the twelve chief deities in Gk. mythology. She was the goddess of the hearth and home, the personification of family life; and, by extension of the idea of family life to the nation, she was the goddess of the state. In this character her sanctuary was in the prytaneum, where the central fire of every tn. and stato was kept perpetually burning, and where the magistrates, as fathers of the state, held their meetings. If by any accident this fire was extinguished it might not be rekindled by ordinary fire, but only by the sun's rays or by friction. Apollo and Poseidon both sought the hand of H., but she took a vow of perpetual celibacy, and thereafter Zeus made her the presiding deity over all sacrifices. Intending colonists took some of the sacred fire with them to be kindled on the hearth of their new colony. H. is identified with the Rom. Vesta (q.v.). See T. Allen and E. Sikes (ed.), *Homeric Hymns*, xxix., 1904, and J. Farnell, *Cults of the Greek States*, v., 1909.

**Heston and Isleworth**, urb. dist. in the co. of Middlesex, England. It is a residential suburb of London, 12 m. S.W. of St. Paul's. Pop. 88,000.

**Hesychasts**, known also by the sobriquet of Omphalopsychoi, were a sect of the Gk. Church which arose during the fourteenth century. The sect was a mystic one, its practice being based on the theory that a divine light was hidden in the soul, which was believed to be situated in the stomach. By contemplation at stated times the H. endeavoured to draw out this light. They died out very quickly. See monograph by F. J. Stein, 1874.

**Hesychius**, Gk. grammarian of Alexandria of the fifth century A.D. His lexicon of Gk. words and phrases, with explanations of customs, usages, etc., is of the utmost value, especially in regard to rare words as used by writers like Æschylus. In the only MS., now in Venice, which survives, there are large interpolations by later Christian writers. H. based his work on that of Diogenianus. See M. Schmidt, 1868.

**Hesychius of Miletus**, 'Illustrious,' Gk. chronicler of the fifth century A.D. His hist. of the reign of Justin I. and of Justinian is lost; of his universal hist. an

extremely valuable fragment, giving the hist. of Byzantium (Constantinople) down to the reign of Constantine the Great, survives. His biographical dictionary remains in an epitome of Suidas. See J. Orall, 1820, and J. Flach, 1882.

**Hæteræ**, or **Hætalrai**, name usually applied in ant. Greece to the best class of courtesan. The education of Gk. women was almost entirely neglected, but the H. were among the most beautiful, accomplished, and intellectual of Gk. women. They were nearly all trained to play the cithara or the flute, and to dance; Lasthenia studied philosophy under Plato, Leontion was a pupil of Epicurus, while Aspasia, the mistress of Pericles, and perhaps the most famous of all the Gk. courtesans was one of the first advocates of woman's rights to education and culture, and the friend of Socrates. Other famous H. were Phryne, the mistress and model of Phidias, Lais, Pythionice, and Theodote. Most of these lived in Athens; but Corinth was even more famous for the number, beauty, and refinement of its H. See P. van Limburg-Brouwer, *Histoire de la civilisation morale et religieuse des Grecs*, 1833-12; W. Plankl (ed.), *Heldren-Briefe* (Gk. and Ger.), 1925.

**Heterocyclic Compounds**, organic ring compounds with an atom or atoms of other elements as well as carbon in the ring. Exan  $\text{C}_6\text{H}_5\text{N}$  pyridine, quinoline, furan, thiophen, and penicillin.

**Heterodyne**, method used in wireless telegraphy for the reception of continuous wave-signals, by the production of beats between the incoming waves and the oscillations of the receiving set itself.

**Heteropoda**, name given to a section of gastropod molluscs, and with the Platy-poda constitute the tribe Tanioglossa. The members of this section are free-swimming and large, their chief characteristics are a large-sized head with two tentacles, transparent shell and tissues, and small visceral sac. In most families the foot is divided into the propodium, or anterior part, the mesopodium, on which is a small sucker, and the metapodium, which is elongated and forms the caudal appendage. The H. contain many families, the most important being Atlantidae, Carinidae, and Pterotracheidae.

**Heteroptera**, name given to a sub-order of Hemiptera (q.v.); its members differ from those of the Homoptera in that their wings, when in repose, lie flat on the back. They are divided into Gynnocerata, in which the antennæ are conspicuous and easily moved, and Cryptocerata, in which the antennæ are hidden under the head of each eye; the former series are terrestrial, and include the extensive and important family Pentatomidae; the latter are aquatic bugs, containing six families, which are widely distributed.

**Heterotropic Substances**, see under ISOTROPY.

**Hetman** (Russian *Ataman*), title of the commander-in-chief of the Polish army when the king was not present. It was adopted by Russia as a title for the head of the Cossacks (q.v.), and was later held by the Tsarevitch. It was also used for

the elected elder of the *Stanitsa* in Cossack administration. See COSSACK.

**Hetton-le-Hole**, tn. in the co. of, and 5 m. N.E. of the city of Durham, England. It is the centre of a coal-mining dist. Pop. 19,000.

**Hettstedt**, tn. in Saxony, Germany, 9 m. N.W. of Eilsleben. It has copper mines, and is noted for manufs. of copper and brass ware, and pianos. Pop. 8,200.

**Heuglin, Theodor von** (1824-70), Ger. traveller in Africa, b. at Hirschlanden, in Württemberg. Trained as a mining engineer, he became interested in scientific investigation. In 1850 he went to Egypt and learnt Arabic, and then went to Arabia Petraea. Two years later he went to Abyssinia with Dr. Reitz, Austrian consul at Khartoum, and later became his successor. During his consulate he again went to Abyssinia and to Kordofan, bringing back a valuable collection of natural hist. specimens. His next expedition was to Somaliland, after which he went to Central Africa. In 1862 he joined the Tinné expedition, and in 1870 went to the polar regions.

**Houlandise**, named after H. Houlandise, an Eng. mineralogist; a monoclinic, translucent mineral, of pearly lustre and white, red, gray or brown colour. Occurs in coffin-shaped crystals in the vesicles of basalt, usually with other zeolites. Fine crystals also occur in the Campsie Hills, Stirling, the Kilpatrick Hills, Dumbarton, in Iceland, Faeroe Is., Vindhya Hills, and Nova Scotia. Composition: silica (58-59 per cent), alumina (15-17 per cent), lime (6-7 per cent), soda, etc.

**Hevelius** (Hewel, or Hewelcke), Johann (1611-87), Ger. astronomer, b. at Danzig. After travelling in France and England he settled as a brewer in his native tn., and took a leading part in municipal affairs. Always interested in astronomy, in 1641 he built an observatory in his house and fitted it up with first-class instruments, including a tubeless telescope made by himself. He was the founder of lunar topography, the results of which he pub. in his *Selenographia* (1647). He discovered four comets in 1652, 1661, 1672, and 1677. In Sept. 1679 his observatory was burnt down. His works include: *Prodromus cometicus* (1665), *Cometographia* (1668), *Machina celestis* (1st part, 1673; 2nd part, 1679), and *Prodromus Astronomicus* (1690). See H. Westphal, *Leben, Studien und Schaffen des Astronomen Hevelius*, 1820.

**Heule**, tn. in W. Flanders, Belgium, 2 m. N.W. of Courtrai, on an affluent of the R. Lys. There are manufs. of linen. Pop. 8,200.

**Heverlee**, Belgian tn. in the prov. of Brabant, 15 m. E. of Brussels on the R. Dyle, engaged in agriculture and mkt.-gardening. It has an old abbey and a beautiful castle. Pop. 11,600.

**Hever Castle**, fifteenth-century castle near Edenbridge, Kent, England. Formerly owned by the Boleyn family and once occupied by Anne Boleyn. Now restored as a residence of Viscount Astor.

**Hewart**, Sir John Gordon Hewart, first Viscount and Baron, of Bury, Lancs.

(1870-1943), Eng. lawyer, b. at Hurv, eldest son of Giles H., of Hurv. Educated at Bury Grammar School and at Manchester Grammar School and at Univ. College, Oxford—scholar, 1887. Invited by C. P. Scott of the *Manchester Guardian* to join the staff of that journal and for six years was a regular reporter in the Press Gallery at Westminster and afterwards principal writer on the *Morning Leader*. It was not until 1902 that he was called to the Bar by the Inner Temple, having obtained a certificate of Honour. Had a large practice in Manchester and Liverpool. His rapid rise was due not only to his mastery of the law but also to the scholarly exactness of his oratory and his imperturbability. The most famous case of his earlier days was the well-known libel action in 1909 of *Artemus Jones v. Hulton*. This case, a leading authority on the law of libel, largely increased his reputation. In 1912 he became a B.C. and in 1913 he was elected Liberal M.P. for Leicester. Solicitor General, 1916-17; attorney general, 1921-22—generally considered one of the best, if not the best, of the law officers of modern times. In 1921 he was admitted to the Cabinet as a personal distinction. As attorney general he was a member of the Irish Conference and one of the Brit. signatories of the Irish peace treaty. Had the way to the Woolstack been clear he would have been Lord Chancellor. In 1923 on the retirement of Lord Eversham, he became Lord Chief Justice and brought to that office much legal learning and scholarship. As a criminal judge he was successful, but it was *pari passu* he was apt to forget that he was not still an advocate. Yet though an impartial survey of his career must take note of this criticism, he remains a great judge and for intellectual accomplishment, he was probably never surpassed by any previous holder of his office. President of the War Compensation Court from 1922 till his labours were ended in 1929. As an old Liberal he was tenacious of the rights of the public against bureaucracy and in 1923 he put a veto, *The Act Despotism*, against the delegation to officers of the power of legislating by Order in Council, with the Rating and Valuation Act of 1923, as the starting point of his indictment. Always tenacious of his rights and jealous of the dignity of his office, as was shown during the second reading in 1931 in the House of Lords of the Supreme Court of Justice (Amendment) Bill. As Lord Chief Justice he became a member of the committee established in 1924 to safeguard future transfers of the controlling shares in the *Times*.

Hewins, William Albert Samuel, (1867-1911), Eng. economist and politician, b. at Wolverhampton, second son of Samuel H. Educated at Wolverhampton and Pembroke College, Oxford. He was prof. of economics at King's College, London, 1897; director of the London School of Economics, 1893-1903, and a member of the Senate of London Univ. till 1903, when the Tariff Reform movement of Joseph Chamberlain brought him prominently before the public as one of the chief

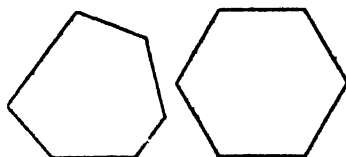
economic supporters of the campaign and as secretary to the Tariff Reform Commission, 1903-17. He was Unionist member for Hereford 1912-13. His economic works include *English Trade and Finance of the Seventeenth Century* (1892), *Imperialism and its Probable Effect on the Commercial Policy of the United Kingdom* (1901), *Trade in the Balance* (1911), *Empire Restored* (1927), *The Apologia of an Imperialist* (1929), *The Royal Courts of Britain* (1929).

Hewlett, Maurice Henry (1861-1923), Eng. novelist and poet, eldest son of Henry Giv. H., of Shaw Hill, Addington. Educated at Iskworth. He was called to the Bar and entered the chambers of a prosperous cousin. He then succeeded his father in a respectable post in the Land and Record dept. of the Woods and Forests, 1896-1900. His first literary work was *Lairnark out of Luscany* (sketch of Italy) and *The Masque of Dead Florence* (in vol. 1, 1895). His first popular success was gained by his brilliant, passionate romance, *The Forest Lovers* (1898), full of the colour of early medieval romance. This was so great a success that within three years he had made a sufficient fortune to be able to quit the Land Revenue dept. In the interim he had pub. *Richard Lion and Nay* (Richard Coeur de Lion 1900) an historical novel, which also had proved extremely popular. He then went to stay at Whittingham with Arthur Ballour in order to collect material for his next historical novel, *The Queen's Quair* (Mary Queen of Scots, 1901). A romantic, but not sentimental, he had great integrity and a sense of purpose and these qualities led him in later life to join the Fabian Society and to lasting connections with the Quakers. However, just his claim to be a poet it is as a novelist that he must be judged and in his novels he is always sensitive and poetical, compassionate and selfless. There is a kind of uprightness and simplicity throughout all his stylized, fairy tale background which both illumine and redeem the artificiality. The interesting fact about his *Forest Lovers* is that it was such a striking success in an age which was essentially anti-realistic and, perhaps, because of that very materialism. But he never quite repented that success with his other works in this genre, such as *Little Noddy in Italy* (1893), *The New Canterbury Tales* (1901) and *Read in Luscany* (1909). In the *Foot Lament* (1905) and *Rennys River* (1911), which followed his essays in the field of historical romance, he returned to his medieval romances. *The Sleeping Lady* (1907), *The Harrow* (1910), *Halfway House* (1912), and other novels, deal with more modern times. It might seem that John Senhouse, the character in *Halfway House* whom H. modelled on himself, was the poet and artist that H. wanted to be, though the portrait is not entirely convincing. His poetry includes a dramatic pastoral, *Pan and the Young Shepherd* (1898), *Artemus* (1909), and *Lore of Prosperpine* (1913). His last works were *Flowers in the Grass* (poems), *In a Green Shade* (1920),

and *Wiltshire Essays* (1922). He also wrote a novel, with the incomprehensible title of *Bendish*, which has certain obvious likenesses to the Byron-Shelley episode, Bendish being Byron and the period that of the first Reform Bill. The present generation neglects H., and his Edwardian best-sellers, but there is still to be found in them something both significant and stimulating. See L. Binyon (ed.), *Letters, to which is added a Diary in Greece, 1914, 1920*.

**Hexachord**, term used originally in Gk. music for a diatonic series of six tones, or for the interval of a major sixth. It was also applied to an instrument having six strings. In medieval music, it referred to a diatonic series of six tones containing four whole steps and one half step.

**Hexagon** (Gk. ἑξ, six, and γωνία, angle), in mathematics a figure containing six angles and bounded by six sides. If these are equal the figure is shown as a *regular* H. Hexagonal construction gives a body



HEXAGON

the greatest possible amount of strength and stability, and doubtless for this cause is the one adopted by bees for making their cells. Pascal's theorem with reference to the H. is important. It states that if a H. be inscribed in a conic section the points of intersection of the pairs of sides (i.e. 1 and 4, 2 and 5, 3 and 6), produced, lie on a straight line.

**Hexahydroxycyclohexane**, see INOSITE.

**Hexameter**, form of verse used by the Gks. and Latins, for epic and heroic poems, is perhaps the most important of classical metres. The *Odyssey* and the *Iliad* alone among Gk. productions would have sufficed to make it famous, while the greatest example of its use in Lat. is in the *Æneid*. Though both the Gk. and Lat. forms of the H. are based on the same plan, it is necessary to differentiate slightly between them. The normal line in both, however, consists of six dactylic ft., of which the last is catalectic. With a line of this type the *Odyssey* opens:

ἀνδρᾶ μοι | εἰρήνη | Μυῖσά πολ | ὑμῶσσι  
| ὅς μ' ἔλθῃ | πῶλ' ἄλ'

Variations from this form are, of course, frequent. Spondee may occur in any or every foot, though a line composed entirely of spondee is rare in Gk., and in Lat. still rarer and more barbarous. Thus it is only in an early poet such as Ennius that such a line could occur as:

ὄλλι | ρῆπον/δ'ιτ' ῥῆ | Αἰβᾶν/δ'ιτ' ῥῆ  
One or two caesuras (breaks in a foot)

occur in every line, in the third and fourth ft. In Gk. a single weak caesura (i.e. after the second syllable of the dactyl) is sufficient, but in Lat. it is common to find a strong caesura (i.e. after the first syllable of the dactyl) in the third foot, and a weak caesura in the fourth, or *vice versa*. Thus, for example, in the line from Ovid,

'Addēquod | ingēnd'ās didi|cisse n |  
deltēr | ārtis,'

the strong caesura occurs in the third foot after *ingenuas*, the weak caesura in the fourth foot after *didicisse*. Lines with only a weak caesura are very rare except in the earlier poets.

**Hexamine**, Hexamethylenetetramine (CH<sub>2</sub>)<sub>6</sub>N<sub>4</sub>, is a white solid obtained by the action of formaldehyde upon ammonia. It is used in medicine, under the name of H., or of urotropine, in certain diseases of the urinary organs.

**Hexane**, an important constituent of petrol, especially of the solvent called petroleum—ether or ligroin. The formula is C<sub>6</sub>H<sub>14</sub> and sev. isomeric compounds can exist, but only the normal H. is important. It is a colourless liquid, sp. gr. 0.6603 at 20°, insoluble in water. It can be made synthetically by heating propyl iodide with sodium. In its chemical behaviour it closely resembles heptane (q.v.).

**Hexapla**, ed. of the O.T. and version in parallel columns prepared in the second century by the famous Alexandrian scholar, Origen. It consisted of the Heb., a transliteration of the Heb. in Gk. characters, an amended Septuagint version and three other versions by the scholars Aquila, Symmachus, and Theodotion. The work has survived only in a few fragments (ed. by D. and F. Field in *Origenis Hexaplorum quae supersunt*) but these are invaluable to critics and students of the O.T. It contains, indeed, almost all that remains of the Gk. versions other than the Septuagint.

**Hexateuch**, name now generally used to denote the first six books of the O.T., which modern criticism shows must be regarded as a literary entity. The name is coined on analogy with Pentateuch, which title was early used by Origen and Tertullian for the books of Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. During the first eighteen centuries of the Christian era, the tradition of the Mosaic authorship of the Pentateuch was almost universally received, but such a tradition was bound to vanish before the first appearance of the light of criticism. In many places Moses is spoken of in the third person; and in Deut. xxxiv. 10, it is said that 'there arose not a prophet since in Israel like unto Moses,' while the account of Moses's death in which this occurs can hardly have been penned by the prophet himself. There are similar objections immediately apparent to the tradition that Joshua was the author of the book which bears his name. A more detailed examination of the Hexateuch led to the discovery of a great number of repetitions, discrepancies, and contradictions, and these led to the further con-

clusion that no one of these books was the work of a single hand. The most notable of the repetitions is in the accounts of the Creation. The account given in Gen. ii. 4 f. differs irreconcilably from that which immediately precedes it. The first step in its solution was made by a Fr. scientist, Jean Astruc, who, being guided by the fact that in the early narrative of the Creation the name used for God is *Elohim*, while in the second it is *Yahweh*, divided the book of Genesis into two main divs. or sources. But as criticism moved on to the rest of the Pentateuch, results became far less positive. The clear guidance of the Divine names was no longer to be had, and at first it seemed that the rest of the Pentateuch was a mere disorderly collection of fragments with little or nothing in common. This Fragment Hypothesis owes its origin to the Scotsman, Geddes, and was supported by Vater. W. M. De Wette in his *Dissertatio Critica* (1805) first propounded the now generally accepted theory that Deuteronomy, instead of being the oldest of the Pentateuchal books, is, in reality, the latest, probably being no earlier than the reign of King Josiah. But, a new and more constructive school of criticism was arising under the leadership of Bleek, Ewald, and Hitzig, to whom we owe the Supplement Hypothesis, and to this school, which rapidly superseded the older one, De Wette himself later turned. Here the connection between the Elohist of Genesis and parts of the later books was first clearly seen, and this led to the conclusion that to the Elohist writer was due the *Grund-schrift* or foundation which the Yahwist had used as the basis of the final redaction. This view was attacked by Hupfeld in 1853. Hupfeld distinguished two Elohist sources which he assumed were quite separate both from each other and the Yahwist source. Noldeke showed in detail how the Elohist source was the *Grund-schrift* of all the Hexateuchal books except Deuteronomy. These views, however, have all given way before the now generally received Graf-Wellhausen Hypothesis, which finds in the II. four main strata. These are known as: (1) P, the Priestly Document, or book of the four covenants (Wellhausen's Q), the work of the so-called older Elohist, which forms the framework; (2) E, the (second) Elohist document; (3) J, the Yahwist source, and (4) D, the Deuteronomist. The chief feature of Graf's hypothesis is the alteration in the position of P. This had hitherto been considered the oldest of the documents, but Graf placed it after D, and later critics have endorsed his view. It is now realised that the legal and ritual religion which he seeks to codify came after and not before the prophetic and lyrical Yahwistic conceptions. J is the earliest of the four, but J and E have been wrought so skillfully into a single connected narrative, that it is almost impossible to consider them separately. The result of their union is known as JE. It is impossible here to show the clear distinction between the E and J portions. D either is or contains the book of the law

found in Josiah's reign, from a short period before which it is generally dated. Its characteristic feature is its uniform spirituality, and its pleading for reform. Its style is clearly marked, D was inserted into JE, and then the combined narrative was fitted into the framework provided by P. This last work, the priestly code, differs widely in spirit from the earlier works. It is historical and legislative, dealing with ceremonial regulations and the ordering of the feasts. It formed the framework in which the other three documents were united. Dr. C. A. Simpson in a recent 'critical analysis of the pre-deuteronomistic narrative' of the H. examines certain hypotheses advanced by Eduard Meyer, who himself started from positions laid down by Wellhausen. The essential points are: first, the critical analysis should begin not with the book of Genesis but with the accounts of the exodus from Egypt and the occupation of Canaan; second, that the original tradition of the exodus described a journey from the sea to Kadesh, which became the centre of the Israelites' wilderness life; and that this original tradition had nothing to say about a visit to Sinai or about the law-giving there. Meyer believed that by source analysis he could discover the remains of this primitive account embedded in the H. Dr. Simpson's investigations have satisfied him of the essential correctness of Meyer's view, but he holds that this earliest document was a much simpler narrative than Meyer had realised and that while Meyer was right in thinking that it contained no record of an Israelite mass-journey to Sinai, it may well have once 'told of a pilgrimage made thither by Moses.' We have in the H. what is in effect the sum-total of the available evidence for the hist. of Israel in this period. If, as in this detailed study, we use our hypothetical reconstruction of the hist. to isolate the primitive traditions, and the primitive traditions to establish our reconstructions of the hist., there is a risk of arguing in circles. If, however, the results of this analysis agree with those given by the independent application of linguistic tests, its soundness will be strengthened. See books on the various separate books of the H.; also S. R. Driver, *Literature of the Old Testament* (6th ed.), 1897; C. F. Dillman, *Kurzes exegetisches Handbuch*, (6th ed.), 1892; and C. A. Simpson, *The Early Traditions of Israel*, 1915; and works by authors mentioned in the text.

Hexham, mrkt. tn. of Northumberland, England, situated on the S. bank of the Tyne, about 21 m. by rail W. of Newcastle. It is an old tn. with narrow streets and a mrkt. sq., and is famous for the anct. abbey church of St. Andrew, founded by Wilfrid, archbishop of York, in 673. The present building which stands over the Saxon crypt is a splendid specimen of Early Eng. work. It contains a fine perpendicular roodscreen of oak, and many interesting tombs, particularly one carved Rom. slab. The moot hall and the manor office, two castellated towers of the fourteenth century, are also

of interest. At a short distance S. of the tn. lies the battlefield where the Lancastrians suffered defeat in 1464, and near by are the remains of Dilston Castle where the last earl of Derwentwater was beheaded in 1716. Pop. 10,300.

**Hexoico Acid**, see CAPROIC ACID.

**Heyden, Jan van der** (1637-1712), Dutch artist, b. at Gorkum. His pictures were principally those of the exteriors of buildings, many of them parts of Amsterdam, where, as a rule, he lived, although he did visit other countries. His pictures are characterised by their warm colouring and their breadth of treatment, combined at the same time with a minute attention to detail. One of his best pictures is a view of Amsterdam in. hall.

**Heydrich, Reinhard** (1904-12), Ger. administrator, b. in Halle; served in the Ger. navy, becoming a favourite pupil of Adm. Canaris, head of the naval intelligence dept. From this he passed into the service of the Nazi party, becoming a member in 1931. Under Himmler's (q.v.) protection his career in the Nazi hierarchy was a swift one, and he soon became an Obergruppenführer of the S.S., with the rank of a general of police. As Ger. candidate for the chairmanship of the International Police Commission he used his position in the period immediately preceding the Second World War for the purpose of helping the Ger. espionage service abroad. After the Ger. conquest of Bohemia and Moravia he succeeded von Neurath as Reich protector in Czechoslovakia (March, 1939). He hastened to show that his reputation for cruelty was well merited. He distinguished himself by clothing his instructions for the bestial torture of all opponents of the regime in pseudo-scientific formulae and playing the part of the theoretician who had supplied the doctrine for Nazi practice. In the summer of 1941 he was sent to Norway to assist Quisling to win the Norwegians over to collaboration with the Gers., and, by means of a number of executions and the suppression of what remained of freedom of speech and press, he believed he had placed the security of the Ger. regime in Norway on a firm foundation. Back in Prague he resumed his reign of terror. Between Sept. 28-Nov. 29, 1941, 114 Czech citizens were shot, 55 hanged and 60 others executed in various ways. Ultimately he was assassinated early in 1942, hundreds of Czechs being murdered by the Ger. authorities in retaliation. It was subsequently ascertained that 3 Czech parachutists killed H. They volunteered for a suicide mission to rid their country of the 'Protector of Bohemia and Moravia', who had started a murder campaign against Czech intellectuals. They were members of the Czech Brigade in England and were down to Bohemia in a Brit. plane. They escaped after ambushing H. and hid in the crypt of a small church, but were betrayed by a Church worker whose nerve broke under torture.

**Heylin, or Heylyn Peter** (1600-62), Eng. writer and divine, b. at Burford in Oxfordshire. He graduated at Oxford and

through the influence of Laud became chaplain to Charles I., 1629. He was deprived of all eccles. offices during the Commonwealth, but at the Restoration was made subdean of Westminster. His works number more than fifty, chiefly theological and controversial. He belonged to the High Church party, and wrote *Ecclēstia vindicata; or the Church of England Justified* (1657). His *Ecclēstia Restaurata; or the History of the Reformation* (1660-61) was ed. by J. C. Robertson, (1849).

**Heyn, Piet** (1578-1629), Dutch admiral, b. at Delfshaven. He was taken prisoner by the Spaniards, and afterwards gained victories over them in 1624, and in Brazil in 1626. In 1628 he was successful in capturing the Sp. fleet carrying silver valued at a considerable amount. He met his death in a fight against the pirates of Dunkirk.

**Heyne, Christian Gottlob** (1729-1812), Ger. classical scholar, b. at Chemnitz in Upper Saxony. Although very poor, he was a student at Leipzig Univ., and in 1753 obtained a post in the Brühl Library, Dresden. His ed. of *Tibullus*, which appeared in 1756, secured him the support of Ruhnken of Leyden, and although he suffered many vicissitudes during the Seven Years war, the latter was instrumental in obtaining for him, in 1763, an appointment as prof. at Göttingen. His other works include eds. of the *Enchiridion* of Epictetus; Virgil, 1767; Homer, Plutarch, and Apollodorus, as well as many reviews of books. See life by Ludwig Hoerer, 1813.

**Heyse, Paul** (1830-1914), Ger. author; b. in Berlin; son of a prof. of philology. Educated: Berlin; Bonn. In 1854 he was one of the authors invited by Maximilian of Bavaria to take up his abode in Munich. He excelled particularly as a writer of short stories, all of which are true pictures of life enhanced by humour, by judicious power of rendering detail, and by a graceful style. He wrote some novels and a number of poems. Among his works are: *Thickla* (1858), a poem; *Die Kinder der Welt* (1873); *Das Buch der Freundschaft* (1883), a collection of stories; *Maria von Magdala* (1899), and *Der Heilige* (1902), both of which are dramas. See G. Kemmerich, *Heyse als Dichterschriftsteller*, 1928.

**Heysham, tn.** and port in the co. of Lancashire, England. It is situated about 1 m. S.W. of Lancaster, and has since 1904 been used by the London Midland Region railway in connection with steamboat services to the Isle of Man and Ireland. Pop. 7000.

**Heyst**, watering place in the prov. of W. Flanders, Belgium. It lies about 9 m. N.E. of Bruges, with which it is connected by a steam tramway and by rail. The tn. is attractive and possesses a picturesque harbour. During the First World War the sandbanks of H. held an important Ger. coastal battery. Pop. 6000.

**Heywood**, bor. in the co. of Lancashire, England, situated 8 m. N.N.E. of Manchester. It is engaged chiefly in the manu- of cotton, boilers, machinery, and

chems. It has also brass and iron foundries, and coal mines. Pop. 25,000.

**Heywood, John** (c. 1497-c. 1580), Eng. author, b. probably in London. He seems to have been introduced at court by Sir Thomas More, and to have been a favourite in the time of Henry VIII., Edward VI., and Mary, on account of his ready wit and skill in music. When Elizabeth ascended the throne, however, he retired to Malines. He is chiefly remembered as the writer of interludes, which differed from those of his predecessors in having real persons substituted for qualities personified, thus forming a link with the modern drama. He also excelled as a writer of epigrams. Among his works are: *A Mery Play between the Pardoner and the Frere, the Curate and Neybour Pratte* (1533), *The Play of the Wether* (1533), *The Four P's* (1545f). See P. W. Pollard, *A Critical Essay*, 1903; T. S. Graves, *On the Reputation of John Heywood*, 1923; R. W. Bolwell, *The Life and Works of John Heywood*, 1922.

**Heywood, Thomas** (c. 1775-c. 1850), Eng. dramatist, was a native of Lincolnshire, and a student at Cambridge. In 1596 he had begun his career as a playwright, and in 1598 was an actor in Henslowe's company. He was a prolific writer, for seventeen years before his death he claims to have written about 200 plays. His dramas deal with ordinary domestic life and with adventure, and in addition to these his works comprise pageants, elegies, and poems. Among his writings are: *A Woman killed with Kindness* (1603), *The Fair Maid of the West* (1631), *The English Traveller* (1633), *The Wise Woman of Hogsden* (1638), while among his other writings are: *Troia Britannica* (1609) and *An Apology for Actors* (1612). See J. A. Symonds in an Introduction to *Thomas Heywood*, 1903; P. Aronstein, *Thomas Heywood*, 1913; A. M. Clark, *Thomas Heywood as a Critic*, 1922; L. B. Wright, *Heywood and the Popularising of History*, 1928.

**Hezekiah** (Heb. *Hizkijāhū*, 'Jehovah hath strengthened'), king of Judah, the son and successor of Ahaz, with whose reign his own provides a most favourable contrast. He was young when he ascended the throne (c. 715 or c. 720 B.C.), and the early part of his reign was doubtless spent under a regency. The king was personally intimate with the great prophet Isaiah, and it may well have been to his influence that Hezekiah's reforming zeal was due. But the reign is memorable for great deeds without, as well as for reform within. The Assyrian overlordship was rejected, and in the second of the two expeditions sent to reneatate it, Israel won a conspicuous success.

**Hiawatha**, legendary chief who fl. about 1450, belonging to a tribe of the N. Amer. Indians. He is said to have formed the League of Six Nations, known as Iroquois, and to have been sent on earth to teach men the arts, agriculture, medicine, and navigation. He departed to the land of Ponemah (Hereafter) on the appearance of the white man. Longfellow's famous poem *The Song of Hiawatha* (begun June

25, 1854, finished March 28, 1855, and pub. Nov. 1855) has long held its place as the classic of Algonkin legend. The scene of the poem is among the Ojibways on Lake Superior between the Pictured Rocks and the Grand Sable. Perhaps the best account of the legendary H. is that to be found in H. Schoolcraft's *Algie Researches* (1839), the author having married a half-breed wife. The Iroquois form of the H. tradition is to be found in the same author's *History, Condition and Prospects of the Indian Tribes of the United States* (1851-57). In these we learn that H. was supposed to have been sent among the N. Amer. Indians to clear their rivers, forests and fishing grounds, and to teach them the arts of peace; and that he was variously known as Michabou, Chiabo, Manabozo, Tarenawagou, and Hiawatha.

Hibbert Lectures are a course of lectures first begun in 1878. They were instituted by the trustees of a Jamaica merchant, Robert Hibbert (1770-1849), who left money for the founding of scholarships, particularly for Unitarians. Until the year 1874 the money was used solely for this purpose, but in that year the trustees decided to begin the lectures for the purpose of discussing, and if possible settling, doubtful points of religion, quite apart from any sect. The first series was given by Prof. Max Muller, and since then the lectures have included Renouf, Renan, Knenen, Beard, Revillo, Pfleiderer, Sayce, and Hatch. The *Hibbert Journal*, financed by the Trust, was founded in 1902.

**Hibbing, tn.** in St. Louis co., Minnesota, U.S.A., situated 65 m. N.W. of Duluth. It is in the centre of the great Mesabi iron ore deposits. One of the mines is said to be the largest in the U.S.A., and has produced as much as 4,700,000 tons in one year. The chief industries are iron mining and lumbering. Pop. 16,300.

**Hibernation** (Lat. *hibernum*, winter), term applied to the dormant condition of certain animals during the cold weather. The same process is to be seen in warm latitudes in the summer, and is then called aestivation (*q.v.*), from the Lat. *caestivum*, summer. The cause of the practice of H. is probably the failure of the food supply. Among the hibernating animals are the bat, the bear, the badger, the dormouse, the marmot, the hedgehog, many reptiles, and terrestrial molluscs. The animals take precautions against being exposed to the cold, and bury themselves in caves, hollow trees, under the snow, etc. The hedgehog and the squirrel, however, are uneasy sleepers and are often abroad during the winter. The animals which do not hibernate completely store up 'caches' of food in the summer for the winter months. All such are vegetarians, save the Arctic fox, who hoards up dead hares, ermines, lemmings, etc. Among the soundest sleepers are the so-called cold blooded creatures, snakes, toads, and frogs. The distinguishing features of H. from a physiological point of view are: (1) The lowering of the temperature of the body; (2) the cessation of respiration to a very great extent, as proved by the fact



that hibernating animals can be in a poisonous atmosphere for a long time with no ill effects; (3) the cessation of all activities connected with alimentation and excretion.

**Hibernia**, also *Ierne*, *Iverna*, or *Juverná*, old classical name for Ireland used by the Romans.

**Hibiscus**, genus of malvaceous plants, consisting of 150 tropical and sub-tropical species, most of which are herbaceous in habit. They abound in the hot parts of Asia, America, and Africa, while a few are to be found in Europe, and many are valued for their mucilage and the tenacity of the fibre of their bark. *H. esculentus* is a species which is cultivated on account of its unripe fruit, the abundance of mucilage which it contains rendering it a useful article of diet. *H. Rosa-sinensis* is well known as an ornamental plant.

**Hicough**, or **Hiccup**, abnormal form of respiration in which an inspiration is checked by the sudden closure of the glottis. The inspiration is due to a spasmodic contraction of the diaphragm, and this may be caused by an abnormal stimulus of any part of the phrenic nerve; it is, therefore, usually an involuntary reflex following irritation of the mucous membrane of the stomach. The characteristic sound is caused by the passage of the inward current of air through the narrowed aperture and its sudden arrest on the closure of the glottis. Temporary attacks may usually be cured by a draught of cold water, but in certain complaints the accompanying *H.* may last for days. Bismuth or potassium bromide is generally administered in such cases.

**Hichens**, Robert Smythe, Eng. novelist and journalist, b. 1861, at Speldhurst, Kent; eldest son of Canon F. H. Hichens. Educated at Clifton College and at the London School of Journalism. Very popular novelist and successful playwright. His first novel, *The Green Carnation* (1891), was a satire on the mannerisms of Oscar Wilde, then at the height of his fame. He subsequently pub. *The Call of the Blood* (1906), *Bella Donna* (1909), *The Dweller on the Threshold* (1911), *The Way of Ambition* (1913), *In the Wilderness* (1917), *Mrs. Marden* (1919), *December Love* (1923), *Dorlor Arts* (1929), *The Bravellet* (1930), *My Desert Friend* (1931), *The First Lady Brendon* (1931), *The Paradise Case* (1933), *The Afterglow* (1935), *Secret Information* (1938), *The Million* (1940), *Incognito* (1947), *Too Much Love of Lirio* (1948), and an autobiography, *Yesterday* (1947). He collaborated in three plays, *The Medicine Man* (1898), *Becky Sharp* (1903), and *The Garden of Allah* (1905).

**Hickes**, George (1642-1715), Eng. divine and philologist, b. at Newsham, near Thirsk, Yorkshire. He received many preferments at the beginning of his career, but at the Revolution, on refusing to take an oath of allegiance to William of Orange, was deprived of all his benefices. In 1691 he was consecrated suffragan bishop of Thetford by a nonjuring prelate. His fame rests on *Theaurus Grammatico-Criticus et Archaeologicus Linguarum Flerarum Septentrionalium* (1705). See

biographical notice in J. Nichols, *Literary Anecdotes*, 1812.

**Hickory**, native tree of N. America, belonging to the genus *Carya*. The word is contracted from the native Virginian pohickery. The husk which covers the shell of the *H.* nut separates with four valves, while the nut itself has four, or even more, blunt angles. The male flowers are borne in catkins, and the leaves are pinnate with serrate margins. The tree is fine and graceful with beautiful leaves. The wood is very valuable for fuel purposes. The best known species are: *C. alba* or shell-bark *H.*, which produces very fine nuts; *C. oliviformis*, which produces the popular pecan nuts; *C. porcina*, which has pig-nuts; and *C. amara*, with very bitter nuts which are quite uneatable.

**Hickory**, tn. of Catawba co., N. Carolina, U.S.A., on the S. and the Carolina and N.W. railroads. It manufs. flour, lumber, carriages, and foundry products. Pop. 13,400.

**Hicks**, Sir (Edward) Seymour (1871-1919), Eng. actor-manager, b. at St. Heller, Jersey, son of an army officer. First appearance at Grand Theatre, Islington, 1887; in *In the Ranks*. Chief light comedian at the Gaiety Theatre from 1894. He married the actress Ellaline Terriss (b. 1872) in 1902. H. was author of numerous plays, including *Bluebell in Fairyland* (1901), *The Catch of the Season* (1904), and *The Man in Dress Clothes* (1922). He was knighted in 1935. Pub. *Twenty-four Years of an Actor's Life* (1910), *Between Ourselves* (1930), *Acting: A Book for Amateurs* (1931), and *The Vintage Years* (1943).

**Hicks**, William (1830-83), Brit. soldier. He entered the army in 1849, and served with distinction through the Indian mutiny. He took part in the Abyssinian war (1867-68), and retired with the rank of colonel in 1880. In 1882 he entered the Khedive's army, in which he was known as Hicks Pasha. As chief of the staff he drilled the army into good order, and drove the dervishes out of the country between Sennar and Khartoum. Although he objected that his troops were unfit to accomplish the task, he was despatched to recapture El Obeid, which had been taken by the Mahdi. At the Battle of Kashgil on Nov. 1, between H. and the personally led forces of the Mahdi, the majority of his men were slaughtered, and H.'s head was cut off. See J. Colborne, *With Hicks Pasha in the Sudan*, 1884.

**Hicks-Beach**, Sir Michael Edward, see ST. ALDWYN, EARL.

**Hidalgo**, state of Mexico, bounded on the S. by Tlaxcala and Mexico, Querétaro on the W., San Luis Potosi on the N., and Vera Cruz and Puebla, on the E. The N. and N.E. part is mountainous and rugged, being traversed by spurs of the Sierra Madre range, while in the S. and W. the country is fertile. Mining is carried on to a large extent, the silver and gold mines especially being world famous. Iron is worked at Encarnación and Apulco; other minerals mined are quicksilver, copper, lead, and zinc. The orange and sugar

cane are cultivated, also the staple cereals. The cap. is Pachuca. Area 8057 sq. m. Pop. 771,800.

**Hidalgo** (from *hijo de algo*, son of somebody, or possibly *Italicus*), title of the lower nobility. They had the right to use the title *don*, but when constitutional gov. was instituted their privileges were taken away.

**Hidalgo del Parral**, city of Chihuahua, Mexico, situated about 120 m. S.E. of the tn. of Chihuahua. In the vicinity are gold and silver mines. Pop. 16,006.

**Hides**, see **LEATHER**.

**Hiempsal**, name of two princes of Numidia: (1) Son of Micipsa, was murdered by Jugurtha, who had been given by Micipsa a share in the rule of the kingdom. (2) Probably grandson of Masinissa, and ruler of Numidia after the Jugurthine wars. He was afterwards driven from his kingdom by the followers of Marius, but in 81 B.C. the kingdom was restored to him by Pompey.

**Hierapolis**: (1) 'The Holy City,' so called by reason of its hot springs and cave, Plutonium, mentioned by Strabo, on account of which it was held sacred. St. Paul founded a Christian church here and it was the bp. of the philosopher, Epictetus. It was also a seat of worship of the goddess Cybele, and a centre of Phrygian nationality. See Sir W. Ramsay, *Cities and Bishoprics of Phrygia*, 1895. (2) An ant. city of Syria (Gk. *Bambyce*, Arabic *Mumayy*) on the high road from Antioch to Iraq. At one time an important centre of the cotton and silk trade, its decay dates from the Mongol invasion. Romanus Diogenes captured it in 1068, and it was stormed by Saladin in 1175. It was a seat of worship of Astarte, whose temple was ravaged by Crassus in 53 B.C.

**Hierarchy** (Lat. *hierarchia*, Gk. *ἱεραρχία* from *ἱερός*, sacred, and *ἀρχός*, leader), governing body of the Church, consisting of the bishops and lower orders of clergy.

**Hieratic**, see **HIEROGLYPHIC AND HIERATIC WRITING**.

**Hieros**, see **HYELES**.

**Hierocles**, name of sev. Gks., the chief of whom are: (1) (fl. c. A.D. 430). A Neoplatonist writer of Alexandria. He studied under the Neoplatonist Plutarch at Athens, and for sev. years taught at Alexandria. He later removed to Constantinople, where his religious views caused such offence that he was cast into prison. To him is attributed a commentary on Pythagoras's *Carmina Aurea* (ed. F. W. Mullach, *Fragmenta philosophorum Graecorum*, 1860), and *Φιλογίως*, a collection of over 250 jests (*αστεία*) (ed. E. Eberhard, 1869). (2) Stoic, the author of *Elements of Ethics* (*Ἠθικὴ στοιχειώσις*), which is sometimes attributed to the above. See Prächter, *Hierokles der Stoiker*, 1901. (3) (fl. c. A.D. 300). Proconsul of Bithynia and Alexandria, supposed to be the instigator of the persecutions of the Christians (303), and the author of *Λογοὶ φιλαληθείας πρὸς τοὺς χριστιανούς*.

**Hieroglyphic**, **Hieratic**, and **Demotic Writings**. Hieroglyphic writing (Gk. *hieroglyphiká grámmata*, from, *hierós*, holy, sacred, *glyphe*, 'carving,' *grámmata*,

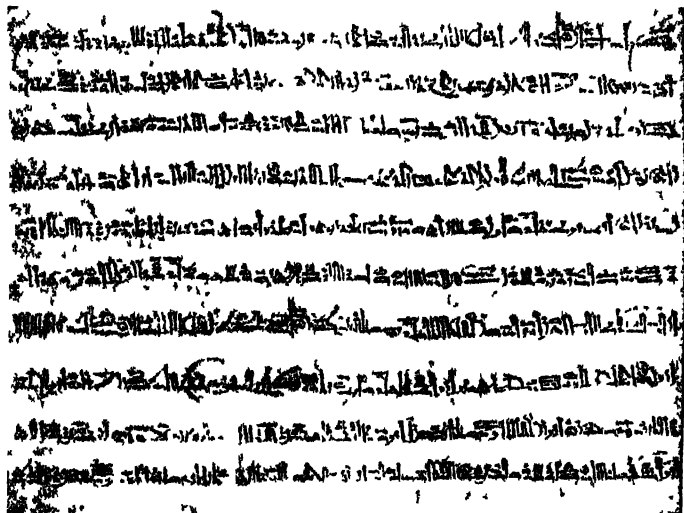
'letters'), was the term applied by the Gks., as mentioned by Clement of Alexandria (c. A.D. 200) in *Strom.* v., 4, to the pictorial symbols carved on Egyptian obelisks, sarcophagi, temples, and other monuments, or drawn on paintings, and which constituted one of the most important systems of writing of the ant. world. The term is also applied, although improperly, to other symbolical systems of writing, like those used on Hittite (q.v.), Mayan (q.v.) and Aztec (q.v.) monuments. The secondary meaning of the term 'hieroglyphic' for any 'unintelligible' characters or, in general, as denoting something mysterious or emblematic, is easily accounted for by the fact that the Egyptian hieroglyphics for centuries defied all attempts on the part of antiquarians and scholars to decipher them.

The origin and the early hist. of hieroglyphic writing are still uncertain. It is almost universally accepted that they were parallel in many respects with those of other so-called 'ideographic' systems of writing (see **WRITING**). According to this common theory, the Egyptian hieroglyphics started with crude pictures delineating objects such as 'flower,' 'sun,' 'horn,' 'eye.' Later, this method of communication becomes too slow and cumbersome, and more or less figurative objects are chosen to express compendiously a whole train of ideas by their essential relationship with that whole of which they form a salient part, e.g. flying arrows to indicate a 'battle.' Thus, pictography (q.v.) becomes ideography (q.v.); the representative signs are a more or less exact pictorial image of the object including the metaphorical or analogical expression of the idea intended, e.g. the sun is represented by a circle, the moon by the crescent. The transition from figurative imagery to symbols representing also abstract ideas, is a comparatively easy one, and it becomes clear that there may be no limit to eclectic ingenuity. For example, an eye with a sceptre beneath it denotes the king or kingly power; a hawk's head surmounted by a disc, the sun. Next come combinations of figurative imagery and symbols representing abstract ideas. Characters used in this way are generally called, although not quite correctly, 'ideographs' (q.v.); they are, to be more exact, word-signs. As soon, however, as the need of continuous discourse arises, it becomes evident that a number of the vital elements of speech, such as prepositions, inflexions, pronouns, or personal names, could not be represented by this means. Hence, the picture-symbols come also to be used to represent the phonetic values of words without any regard to their meaning as pictures, and the system becomes a kind of 'rebus-writing.' The range of expression of hieroglyphics was, therefore, very wide. This was already recognised by the famous decipherers of the Egyptian (1790-1832), Jean François Champollion (1790-1832), who concluded 'that there was no Egyptian writing altogether pictorial or representative, that the ant. Egyptians did not employ a mode of

writing altogether phonetic, that there is no regular writing altogether ideographic existing on any Egyptian monuments, and that the hieroglyphic mode of writing is a complex system—a system figurative, symbolical, and phonetic in the same text, in the same phrase, I would almost say in the same word.

In order to remove ambiguity, there were introduced determinatives, that is signs, which defined the meaning of a word by denoting the class to which it belongs: 'mountains,' 'islands,' 'women,'

either bi-consonantal (numbering about seventy-five, of which some fifty were commonly used) or uni-consonantal, of which originally there were some twenty-four, increased later by *homophones* to about thirty, covering the whole range of Egyptian consonantal sounds. The Egyptians had thus a kind of alphabet. Actually, it was not a true alphabet (*q.v.*), because in practice the Egyptians did not employ it when they could use word-signs or multi consonantal phonograms, which they combined with the determinatives



A PAGE OF THE GREAT HARRIS PAPIRUS

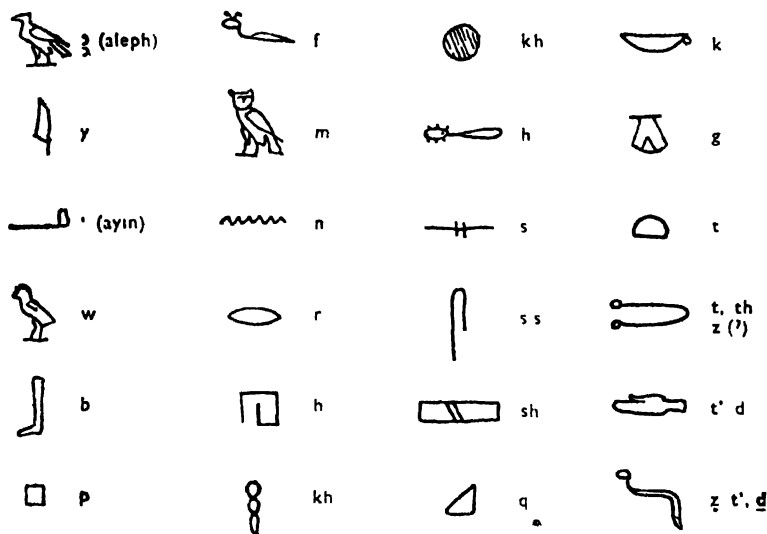
'to see,' 'gods,' 'negation,' and so forth. These determinatives were ideographs or pictorial images, put after a phonetic word, but were not pronounced, because, as mentioned, they only fulfilled the function of determining the meaning of the word they followed. For instance, the symbol representing 'a man with a long beard' was the determinative for 'gods,' 'angust persons,' and 'kings'; 'a man with raised hands' determined 'adoration,' 'invocation,' and 'prayer'; 'the prone figure of a man' determined the ideas of 'death,' 'massacre,' 'enemies,' and so forth. Thus, in general the employment of hieroglyphic characters was threefold, (1) word-signs, (2) phonograms and phonetic complements; (3) determinatives. As to the phonograms, it must be pointed out, that they usually consisted of the bare root of the words, but, as the Egyptian writing (like the Semitic alphabets) was purely consonantal, and there was practically no need for three-consonantal phonograms, generally speaking the phonograms were

into a cumbersome and extremely complicated script, and maintained it for over three and a half thousand years, i.e. from c. 3000 B.C. to about the sixth century A.D., to which the latest hieroglyphic inscriptions belong like the Mayan or Aztec scripts, but unlike the Chinese or cuneiform writings, the Egyptian hieroglyphics were highly pictographic, and maintained their pictorial character right to the end of the employment of this script. Besides, while the symbols of Aztec script, for instance, were crude pictures, Egyptian hieroglyphs on the whole were artistic drawings. The direction of writing was normally from right to left. Sometimes, however, from left to right, and some times inscriptions were written, for purposes of symmetry, in both directions. The signs face the beginning of the lines. Some inscriptions are written vertically.

*Hieratic* (from Gk. *hieratikós*, 'sacred, priestly') or 'priests' writing, was a simple modification of the hieroglyphic system, differing from it only in the external form of the signs. At the time of

Clement of Alexandria, from whom the word 'hieratic' is taken, this script was mainly employed by priests for writing and making copies on papyrus of Egyptian religious texts and literary compositions; and the term 'hieratic' was particularly suitable as opposed to the demotic writing (see below), which then was the script of everyday life. In earlier times hieratic writing was the only Egyptian cursive script employed both for sacred and profane purposes, while the hieroglyphic

scribes as a cursive simplification of hieratic writing. Practically all the chief characteristics of the hieroglyphics, or pictures, that had survived (although only in a schematic form) in the hieratic writing disappeared. Besides, whole associated groups of hieratic characters were fused by ligatures into single demotic signs. On the other hand, as a system of writing, demotic was no more advanced than the hieroglyphic and hieratic scripts, it was neither syllabic nor alphabetic, but



From 'The Alphabet, a Key to the History of Mankind' by Dr David Diringer  
Hutchinson & Co (Publishers) Ltd.

#### EARLIEST HIEROGLYPHIC CONSONANTAL ALPHABET

writing was the Egyptian monumental script. The hieratic script was employed in one way or another from about 3000 B.C. to the third century A.D. The direction of writing, originally vertical, later became horizontal from right to left. A fine example of hieratic writing is to be seen in the Brit. Museum in the Great Harris Papyrus. A page of this papyrus is reproduced in the illustration on p. 125.

**Demotic writing** (from Gk *dēmōtika grāmματα*, as mentioned in Herodotus, II, 36, or *dēmōde*, in Diodorus, from *dēmos*, 'people'), that is 'the people's' writing, 'popular, vulgar' characters, was also called 'enchorial' (on the Rosetta Stone, see below), from Gk. *enkhōria*, *enkhōrios*, of the country, or 'native' writing, or 'epistolary characters' (*grāmματα epistolographika*, in Clement of Alexandria, *Strom.* v., 4). It was a conventional system of signs constructed by the

consisted essentially of word signs, phonograms and determinatives (see above). It was written horizontally, from right to left. Demotic writing was employed from about the seventh century B.C. to the middle of the first millennium A.D. Demotic, the last stage of the native Egyptian script, was thus used until the very end of Egyptian paganism. Coptic, the last stage of the Egyptian language, employed after the introduction of Christianity into Egypt, is written with the letters of the Gk alphabet, but seven signs derived from demotic characters were added to express Egyptian sounds which could not be expressed by Gk. letters.

**Numbers.**—The numbers 1 to 9 were expressed by short perpendicular strokes, as follows. 1 to 3, by one to three strokes; 4 by two above and two below; 5 by three above and two below; 6 by

three above and three below; 7 by four above and three below; 8 by four above and four below; 9 by three lines of three strokes each. 10 was represented by a sign having the form of a reversed U ( $\cap$ ); 100 by a kind of spiral; 1000 by a sign representing the lotus flower; 10,000 by a kind of long, vertical, crooked stroke; 100,000 by a frog; 1,000,000 by a man with upraised arms; all the other numbers were represented by repeating the above signs.

The attempted decipherments of the Egyptian scripts by the *savants* of the sixteenth to eighteenth centuries were unsuccessful, although Warburton conjectured the existence of the 'alphabetic' characters. De Guignes conjectured that some of the signs were determinatives, and the Dan. scholar G. Zoëga 'guessed' that sev. of the hieroglyphics must represent sounds, and actually used the term 'phonetic' in this context in his work on obelisks pub. at Rome in 1797; he also recognised that the oval rings, known as *cartouches* contained royal names. At the beginning of the nineteenth century, real progress was made by Swedish and Eng. scholars in decipherment of demotic and later of hieroglyphic writing. Dr. Thomas Young, of Eumaniel College, Cambridge, pub. various discoveries in the Supplement to the *Encyc. Brit.*, 1819. His was the first real attempt to determine the 'syllabic' or 'alphabetic' values represented by hieroglyphic signs, and his work is extremely important, because it gave one of the clues to Champollion's (see below) celebrated system of phonetic values as opposed to then generally accepted theory that hieroglyphic and hieratic characters were not phonetic. He set himself the problem of determining what groups of demotic characters corresponded to certain Gk. words, and his identification in the hieroglyphic script of sev. names of gods and persons also provided a basis of Champollion's decipherment. However, the Fr. scholar Jean François Champollion may be considered as a real 'father' of modern decipherment; its key was provided by the celebrated Rosetta Stone (now in the Brit. Museum, B.M. 960, No. 24). It was discovered in 1799 by the Fr. captain M. Bouchard, among the ruins of Fort St. Julien, near the Rosetta branch of the Nile, during Napoleon's attempted conquest of Egypt. It was secured for England by Lord Hutchinson under the 18th article of the capitulation of Alexandria. The discovery of this monument of black basalt excited the liveliest interest among archaeologists, orientalists and especially Egyptologists. The stone contains an inscription in three scripts: hieroglyphic (upper part 14 lines), demotic (middle part, 32 lines) and Gk. (lower part, 54 lines). The Rosetta Stone is a priestly decree drawn up in 197-196 B.C. in honour of Ptolemy V. (205-181 B.C.). The fact that a large part of the hieroglyphic version is broken off, the beginning of the first fifteen lines of the demotic version wanting, and the end of the Gk. mutilated, rendered the key a very difficult one to apply. Starting from the

known (the Gk. version) and his knowledge of Coptic, and working upon the way paved by Young, Akerblad, de Sacy, and others, Champollion slowly made the hieroglyphic and demotic writings to yield up their secrets. He commenced by applying phonetic hieroglyphics to the reading of the Gk. and Rom. proper names which occur on various monuments. His principle was this: he estab. that the Egyptians transcribed proper names and foreign words by means of a 'real alphabet,' of which each symbol was equivalent to a single consonant. Extending his views, he applied his 'alphabet' to the reading of groups of hieroglyphics which represent common names, verbs, and other parts of speech, and to the establishing of his theory that the characters or groups of characters which in the hieroglyphic texts express genders, numbers, persons, tenses, etc., are only the phonetic signs of single letters.

Champollion's masterly dissertation on hieroglyphic writing pub. in 1822, his *Lettre à M. Dacier* concerning *l'alphabet des hiéroglyphes phonétiques employés par les Égyptiens*, must be considered of paramount value for the hist. of decipherment, although for more accurate information on the subject reference should be made to more elaborate modern treatises. Much scientific scepticism persisted until the results of Champollion's successful decipherment were confirmed by another important inscription known as the 'Decree of Canopus,' found in 1866 by the eminent Ger. Egyptologist R. Lepsius. The subsequent work of Eng., Ger., Fr., Amer. and other scholars resulted in the fact that at the present day much that is tolerably certain can be postulated of the language and the scripts of ant. Egypt, and an entire civilisation extending over three and a half millennia has been revealed.

The bibliography of the subject is enormous. Following are a few major studies, of recent date, all of them containing rich bibliographies: The Brit. Museum *Guide to Egyptian Collections*, London, 1909; E. A. Wallis Budge, *Facsimiles of Egyptian Hieratic Papyri in the British Museum*, London, 1910, 1923; *Hieroglyphic Texts*, etc., in the *British Museum*, London, 1911-14; J. H. Breasted, *Ancient Records of Egypt*, Chicago, 1909; G. Moeller, *Hieratische Paläographie*, Leipzig, 1909-36; A. Erman, *Die Hieroglyphen*, Berlin and Leipzig, 1912; W. Spiegelberg, *Demotische Grammatik*, Heidelberg, 1925; E. Naville, *L'écriture égyptienne*, Paris, 1926; A. H. Gardiner, *Egyptian Grammar*, Oxford, 1927; T. E. Peet, *Ancient Egypt* (in E. Eyre, *European Civilisation*, etc.), 1934; K. Sethe, *Das hieroglyphische Schriftsystem*, Glückstadt and Hamburg, 1935; E. A. Wallis Budge, *The Rosetta Stone*, 1935; J. A. Wilson, *The State of Egyptian Studies* ('The Ithaca Symposium'), New Haven, 1938; W. F. Flinders Petrie, *The Making of Egypt*, Oxford, 1939; S. R. K. Glanville, *The Legacy of Egypt*, Oxford, 1942; G. Steindorff and K. O. Seele, *When Egypt Ruled the East*, Chicago,

D. Düringer, *The Alphabet*, etc., London, 1948, pp. 58-71.

**Hieron**, or **Hiero I.** (d. 466 B.C.), tyrant of Syracuse, the successor of his brother Gelon. He defeated the Etruscan fleet near Cumæ. On three occasions he won the crown at the Olympic games, and was a patron of Pindar, Archylus, Simonides, and Epicharmus whom he installed at his court.

**Hieron**, or **Hiero II.** (c. 308-216 B.C.), tyrant of Syracuse, a descendant of Gelon. After his victory over the Mamertines (270 B.C.) he was unanimously elected king by all the states of Sicily. In the first Punic war he sided with the Carthaginians, but in 263 became a friend and ally of Rome, to whom he remained faithful till his death.

**Hieronymites** ('Brethren of Goodwill,' 'Gregorians'), hermit order of Hieronymus (or St. Jerome), an offsprig of the Franciscans, founded by Thomas of Sion (fourteenth century). The community settled in Spain and later estab. branches in Portugal, Italy, the Tyrol, and Bavaria.

**Hiero**, or **Ferro**, one of the Canary Is., occupying the most S.W. position of the group. In the attempt to find a meridian circle which should intersect only seas which divide new world from old the Meridian of Ferro was fixed upon. But the Fr. found that the is. was 20° 30' W. of Paris, so reckoned the geographical zero as 20° W. Hence the 'Meridian of Ferro' is really about 30° E. of the is. The chief tn. of the is. is Valverde. Area about 126 sq. m. Pop. about 6000.

**Higden**, **Ranulf** (d. c. 1364), Eng. chronicler, was a monk of St. Werburgh's monastery, Chester, and whose great work was a general hist. entitled *Polychronicon*. This work dealt with events down to his own time, and was printed by Caxton in 1482. It is now ed., with trans. for the Rolls Series (1865-86).

**Higgins**, **Edward**, see under SALVATION ARMY.

**Higginson**, **Thomas Wentworth** (1823-1911), Amer. man of letters, b. at Cambridge, Massachusetts. Graduating from Harvard (1841), he subsequently studied theology, and became pastor of a Unitarian church. He was an enthusiastic supporter of the anti-slavery agitation. During the Civil war he was captain of the 1st S. Carolina Volunteers, a freed negro regiment. He wrote *Army Life in a Black Regiment* (1870), lives of *Margaret Fuller Ossoli* (1884), *Lonsfellow* (1902), and *Whittier* (1902), and *Part of a Man's Life* (1905). See his *Collected Works* (7 vols.), 1900.

**Higham Ferrers**, tn. in the co. of Northampton, England, situated about 13 m. N.E. of Northampton. It is engaged in the manuf. of boots and shoes. Pop. 3400.

**Highbridge**, tn. of W. Somerset, England. It is situated about 25 m. to the S.W. of Bristol, and has locomotive works. Pop. 3000.

**High Church**, that section of the Anglican Church which attaches supreme importance to the administration of word and sacrament by clergy duly ordained,

whose ministrations it considers necessary as the divinely appointed instruments of grace.

**High Commission**, Court of, judicial court estab. by Queen Elizabeth in 1559. It was composed of clerical and lay commissioners nominated by the crown, and its function was to investigate eccles. cases. It attempted to extend its influence over cases which should have been dealt with in the common law courts, with the result that in the reign of James I. Coke tried to check its power by his ruling that it could only fine and imprison in cases of heresy and schism. In 1641 the court, with its lay counterpart, the Star Chamber, was abolished by the Long Parliament. It was revived by James II. in 1686, but finally abolished by the Bill of Rights (1689). A similar court existed in Scotland for thirty years (1608-38).

**High Commissioner**, term of varying import, generally used to mean a high administrative officer in a dependency or protectorate, or a Dominion's Chief representative in London. Thus there was a Brit. High Commissioner for Iraq before that country became independent. In recent years H. Cs. representing the United Kingdom Gov. have been appointed in the dominions of Canada, Australia, New Zealand and S. Africa. They act as confidential channels of communication between the United Kingdom and Dominion Ministers.

**High Court of Justice**, see APPEAL; CHANCERY; COMMON LAW; JUDICATURE ACTS; and SUPREME COURT OF JUDICATURE.

**Highgate**, suburb of N. London, in the co. of Middlesex, about 1½ m. N.W. of St. Paul's. It is noteworthy as having been the place where Bacon and Coleridge d., and also for its cemetery containing the remains of Lyndhurst, Faraday, and George Eliot, among other celebrities. Whittington's Stone is at the foot of H. Hill, and is said to indicate the place at which he turned again after hearing Bow Bells. Pop. 22,000.

**Highland Cattle**, see under CATTLE.

**Highland Dress**, best illustration which the Brit. Isles offer of a costume truly national. The 'garb of old Gaul' consisted of the 'Feile-bracan' or 'belted plaid.' A piece of tartan cloth, 4 yds. long and 2 yds. broad, was drawn in at the waist by a belt, which secured the careful folds of the lower part or skirt. The plaid, that is the upper portion, was usually fastened with a handsome brooch or buckle over the left shoulder, so that the right arm was quite free for use. This simple attire was admirably adapted to the wild, free life of a Highlander. For, if he were overtaken by night or storm he might wrap his warm plaid round both his shoulders, whilst his loose nether garment was no hindrance, whether he wished to scale heights or wade across streams. The tartan (from Fr. *tiretaine*, a linsey-woolsey cloth) was a device with chequered pattern, and one or more stripes relieved against a different-coloured background for signifying the wearer's clan or dist. Members of the

same sept or clan wore tartans whose main characteristics were the same, and whose variations had a local meaning. Broadly speaking, tartans are red and green: the tartan of the Macleods, Graemes, and Forbes was green, whilst the Camerons, Stewarts, and Macgregors all wore red. In time the 'Feilebeag' or 'fillebeag' superseded the 'Feilebreacan'. The lower part of the latter became the 'kilt', which was carefully sewn and tucked, whilst the body part was separate and the shoulder-plaid became merely an ornament. The kilt stopped short of the knees, and over it in front was hung the 'sporrán' or 'spleuchan,' that is a goat's skin purse. The Highland 'bonnet' was a cloth cap adorned with heather, or in the case of a chief with eagle's plumes. Through his belt a Highlander would thrust his dirk, knife, pistols, and fork, whilst on horseback he wore his 'truis,' or 'trews,' that is close-fitting tartan breeches and stockings made in one piece. The gentry were distinguished by silver ornaments and lace embroideries, but these are seen now only in ceremonial dress at balls, gatherings of the clan associations, and the like. The kilt is worn little for everyday dress now, but has a certain popularity for walking and climbing. It is worn by the bandsmen of Highland regiments and the Scots Guards, but is optional wear (with trews or trousers) for other men.

**Highland Light Infantry (City of Glasgow Regiment).** Formerly the 71st and 71th regiments, which were linked in 1851. The 71st was raised in 1777 as the 73rd, but was renumbered 71st in 1786. Lord MacLeod's Highlanders, originally the 73rd regiment of foot but later the 71st, who ultimately became the first battalion of the Glasgow Light Infantry, had, despite their early influx of Glasgow recruits, no nominal connection with Glasgow. That began after the embodiment of a second battalion raised at Dumbarton in 1804, who were disbanded in 1815, six months after Waterloo. For a few months after 1808, at the instance of Lt.-Gen. Sir John Craddock, the 71st were granted the title of the Royal Glasgow 71st Regiment; but in the Peninsula war they became the Highland Light Infantry, though the bonds with Glasgow were not weakened, the regimental records showing that of the 1671 Scottish recruits between 1806-1818 the greater number were listed as belonging to Lanarkshire and Renfrewshire. Later, in 1823, royal approval was given for the adoption of the title 'City of Glasgow Regiment.' This regiment served with distinction in India in the Carnatic and Mysore. It then saw service at the Cape of Good Hope and in the Peninsula war, especially in the retreat to Corunna. It served under Wellington again at Waterloo. After a period in Canada it served in the Crimea war, then in the Indian Mutiny. The 74th was raised in 1787 for service in India. Like the 71st, it served with much distinction in that country, particularly at Assaye under Sir Arthur Wellesley. It served again under him through the

Peninsular war. From 1818 to 1845 it was in Canada and the W. Indies, then went to the Cape, and lost many men in the wreck of the *Birkenhead*. After the Kafir war it went again to India. The H.L.I. saw service in the 1882 Egyptian Expedition, and fought at Tel-el-Kebir. Back to India in 1884, it served later on the N.W. Frontier during the 1897-98 campaign. It fought at the Modder R. during the S. African war (1899-1902). During the First World War it raised twenty-six battalions, which served in France, Flanders, Gallipoli, Egypt, Palestine, Mesopotamia, and Archangel. In the Second World War the H.L.I. took part in the battles on the Western Front both in 1940 and 1944-45.

**Highland Park,** industrial suburb of Detroit, Michigan, U.S.A. with automobile manufs. Its pop. increased from 100 in 1900 to 50,800 in 1940.

**Highland Pony,** see under HORSE.

**Highland Terrier,** see SCOTTISH TERRIER.

**Highlands** are to be distinguished in formation alike from tablelands and mts. Generally speaking, H. may be said to exist in the E. of the Old World, in the E. of Australia, and in the E. of N. America. They occur in broad, expansive masses, unlike high mts. which are much more localised. Their structure, moreover, is peculiar. Both valleys and watersheds or divides radiate, and the riv. systems are like great branching trees; the distribution, as in mountainous countries, of parallel ranges separating valleys is only rarely visible—the Appalachians are an exception; as a rule the valleys branch like fingers in the inner H., thus collecting trib. streams, whilst they broaden and deepen as they pass outward. H. are formed by the denudation or washing out of valleys, as, for example, the H. of Scotland, and by slow crustal movements, and sometimes by volcanic activities.

The H. means specifically that part of Scotland which stretches N.W. of a line drawn between Helensburgh and Stonehaven and the term is used in contradistinction to the Lowlands, of Scotland. See further under GRAMPIONS and SCOTLAND.

The 'White Highlands' is the name commonly given to the plateau and mt. country in Kenya which has been appropriated to settlement by Europeans. The dominating feature of the White H. or H. of Kenya is Mt. Kenia (or Kenya).

H. of the Hudson, mountainous dist. on both sides of the Hudson R., extend through Orange, Putnam, Rockland and Dutchess co., New York. They are from 1000 to 1500 ft. high. The chief peaks are Breakneck (1635 ft.), Crow Nest (1405 ft.), Stony Point, and West Point.

**High Peak,** Derbyshire, England, is part of the Pennine Chain. Height 2038 ft. It is 10 m. S.E. of Manchester, and contains the celebrated Castleton caverns. Also the name of a parl. div. See PEAK DISTRICT.

**High Places,** elevated spots on which altars were erected by the anc. Semitic peoples for worship, in the belief that, as they were nearer heaven than were the

plains and valleys, they were more favourable places for prayer. The practice of worship on these spots became frequent among the Jews, and was with difficulty abolished in spite of the warnings of the Biblical prophets.

**High Point**, tn. in Guilford co., N. Carolina, U.S.A., is 34 m. N.E. of Salisbury. It has a thriving trade, and manufs. bricks, cotton, machinery, and tobacco. It has also furniture factories, silk and cotton mills, carries on a large agric. trade and is a wholesale centre. It is served by three railways. Pop. 39,400.

**High Priest**, head of the Jewish priesthood. In the early days of the Jewish religion there is no trace of this office, which does not appear until the campaign against the local sanctuaries had concentrated worship at Jerusalem. The true prominence of the H. P. dates from the Exile, after the return from which he becomes the head of a theocratic state. The regulations for the H. P. are given (see *HEXAERUON*) in *Leviticus* with great detail, where his ancestry is traced from Aaron and his son Eleazar. The vestments of the H. P. were extremely magnificent, and were worn in the exercise of his duties except on the Day of Atonement, when he alone, clad in white linen, entered the Holy of Holies to sprinkle the blood of sacrifice.

**High River**, tn. of Alberta, Canada, on the Highwood R., 40 m. S. of Calgary, on a branch of the C.P.R. Dairy farming and ranching are the chief occupations. About 20 m. distant are the Turner Valley oilfields. Pop. 1800.

**High School**, term used in the U.S.A. for those schools which superseded about 1850 what were called academies, the difference being that high schools were maintained (as a general rule) at public, not private, expense. In some states their maintenance is part of the state constitution. A H. S. may be regarded as one supported by public funds, usually free, open to both sexes, and where pupils are prepared for technical schools and univs. There are, however, public and private H. Ss.; the term has much the same meaning in Canada, but in England has no definite significance. The Canadian public H. S. is that type of secondary school which in most of the prov. has since 1870 (the period of the origin of the free schools), come to be looked upon as the orthodox institution. Though a separate institution, it is an integral part of the educational chain from the kindergarten to the univ. It made its appearance in Ontario in 1871 as a democratic publicly-controlled, co-educational estab., offering a classical curriculum in preparation for a univ. or, alternatively, an Eng. curriculum for pupils intended for some immediate vocation. The Prince of Wales College, founded in Prince Edward Is. in 1860, the only secondary estab. in that Prov., has some of the features of the public H. S. County academies, the precursors of the H. S. in Nova Scotia were made free in 1864. The grammar schools, the H. Ss. of New Brunswick, were brought under the control of the

local authority in 1884; in 1870, in Quebec, the Protestant Board of Montreal assumed control of the existing H. S. for boys and estab. one for girls in 1875; in the eighties collegiate depts., which later became separate institutions, began to be estab. in Manitoba; in Saskatchewan H. Ss. replaced union schools (i.e. schools arising out of the movement in 1850 in Ontario, where grammar school boards and common school boards were permitted to unite and form schools for giving democratic secondary education in addition to elementary education) in 1907; and in Brit. Columbia a free H. S. was estab. in Victoria in 1876.

**High Seas**, term of international law, denoting the whole extent of sea which is not under the sovereignty of any state. Every country adjacent to the sea owns 'territorial waters' restricted to the area within three m. of its shores. The H. S. are free to all nations, subject to certain laws made for the common welfare.

**High Sheriff**, co. or city officer vested with wide judicial and executive authority. Their duties are defined by the Sheriffs Act, 1887, and include attendance on judges during Assizes, the functions of returning officers during parl. elections, and the preparation of lists of jurors. City sheriffs are appointed annually on Nov. 9.

**High Steward of England**, one of the Great Officers of State under the Eng. crown. The original duty of the H.S. seems to have been to place the dishes on the lord's table at solemn feasts. It would appear that under the Normans the office was vested in the Beaumont earls of Leicester, and passed by marriage from them to Simon de Montfort. After the latter's death in 1265 it was granted by Henry III. to his younger son Edmund, earl of Lancaster, *for life*. Edward II. confirmed it to him *in fee*, and thereafter it descended with the earldom and dukedom of Lancaster. On the accession of Henry IV. the office was merged in the Crown, and has since been created *pro hac vice*. The court of the H.S. formerly decided upon claims to do services at the coronations of the sovereign; but this duty is now performed by the Court of Claims newly appointed on each accession. A H.S. was also created to preside over the House of Lords on the trial of a peer. But after the trial and acquittal of Lord de Clifford in 1935 on a charge arising out of a motor accident it was suggested that this archaic mode of trial be abolished. Privilege of peerage in relation to criminal proceedings was abolished by the Criminal Justice Act, 1948. There is a H.S. attached to both univs. of Oxford and Cambridge, whose duty it is to protect the rights of the univ. courts.

**High Treason**, see *TREASON*.

**Highwaymen**, mounted robbers who infested the high-roads of England during the seventeenth and eighteenth centuries. The most celebrated H. in hist. are: Dick Turpin (1705-39), Swift Nick Levison (hanged at York, 1684), and Jack Sheppard (1702-24).



**Highway. Common Law as to Highways.**—A 'highway,' which in common law (*q.v.*) is a term embracing carriage roads, horse or bridle roads, mere foot-paths, or any other public way, may be comprehensively defined as a way through or over lands of any ownership which is open to the public generally by virtue of an Act of Parliament, a prescriptive right, or by express or implied dedication. The commonest mode by which a public right of way is created is by dedication, which may take the shape of a formal invitation by the owner in fee simple (*see ESTATE*) of the land in question to the public to use a new or existing road, but which more often than not is merely implied from the owner's conduct. Generally speaking, uninterrupted, user for a substantial period of time acquiesced in by the owner creates a presumption of dedication which can only be rebutted by special circumstances. Uninterrupted user for twenty-one years gives the public an absolute right of way by prescription. Dedication may confer only a limited right, whether in respect of seasons, manner, or extent. A limitation in point of duration is void, for a dedication is either in perpetuity or not a dedication at all. It is to be noted that the H. Acts include in the statutory definition of H. bridges (not being co. bridges, or bridges repairable by the inhabs. at l.g.g. of a hundred), towing paths, and navigable rivs., but not railways. Indeed every way which is open to the public is a H., and in this connection it is immaterial on whom is cast the burden of repair and maintenance. A street as defined by the Public Health Act, 1875, is usually, but not necessarily, a H.; a street under the Act being defined as 'any highway and any public bridge (not being a co. bridge), and any road, lane, footway, square, court, alley, or passage, whether a thoroughfare or not.' A H. is also usually a *thoroughfare*, but may, of course, be a *cul-de-sac*. The public right over a H. is merely that of passing along it. There is no right to use it as a place for public meetings or assemblies, and there are sev. recorded cases showing that one's mere presence on a H. for ulterior purposes may well be illegal and actionable. For example, in the case of a man who repeatedly, and for the purpose of annoying, passed and repassed the plaintiff's window while the latter and his family were dining; and again in the classic case of *Harrison v. Duke of Rutland*, where it was held that a man had no right to go on to a H. merely for the purpose of using it to interfere with another man's right of shooting by preventing the grouse from flying towards the butts occupied by the shooters. A public right of way is, as the very term implies, restricted to the surface of the land over which it goes, and the subsoil remains in the freeholder, or, if different freeholders' lands lie on either side of the H., then, generally speaking, the subsoil up to an imaginary line running down the middle of the road belongs to each adjoining landowner. Strictly speaking, the residuary rights in the surface also belong

to the owner of the soil; but in the case of most Hs. such rights are not of any practical value. A mere occupation road laid out through an estate purely for the use and convenience of the inhabs. is not thereby dedicated to the public; such private right may, however, co-exist with a public right of way, and though in general the former would be merged in the latter right, it may well be inherently a larger, and therefore independently subsisting right. A H. cannot at common law cease to be such by abandonment or non-user, for 'once a highway always a highway.' But by Act of Parliament, a H. may be destroyed, and such a course, e.g. in the case of Hs. running along dangerous cliffs, might well be advisable.

**Statute Law as to Highways.**—Under the H. Act, 1835, as amended by the Local Gov. Acts, 1888 and 1894, two justices have power to grant a certificate to 'stop' or 'divert' a H. if both the dist. and par. councils (if any) concur in the proposal to stop or divert. The usual reason for diversion is that some proposed new way is more advantageous, and the only reason for stopping up a H. altogether is that the H. is no longer required. An appeal against the certificate of the justices lies to quarter sessions at the instance of any person aggrieved, who must give the dist. council fourteen days' notice of appeal, and state the grounds of his appeal. The matter will then in due course be tried before a jury. The duty of repairing and maintaining a H. is theoretically still upon the inhabs. of the par. in which it is situated, and an indictment for nuisance lies against such inhabs. at the instance of any one aggrieved if a H. is allowed to fall into disrepair. Nothing in the Local Gov. Act, 1929, with respect to main roads or co. roads affects the liability of any person or body of persons to maintain or repair a H. The Local Gov. Act, 1888, however, practically absolved inhabs. from all liability, so far as main roads were concerned, by instituting the co. council the H. authority for such roads. The allocation of responsibility for maintenance of Hs. has been considerably modified by the Local Gov. Act, 1929 (*see infra*). By a curious rule of law a H. authority is not liable to be proceeded against on indictment for a mere non-repair or non-feasance, but only for misfeasance. The distinction is mainly academic, for a complaint of non-repair to the co. council is equally effective if the cost of repair of a H. is increased by extraordinary weight or traffic, the road authority may, under section 23 of the H. and Locomotives (Amendment) Act, 1878, as amended by the Locomotives Act, 1898, recover the expenses certified by their surveyor to have been incurred by reason of such traffic from the persons by, or in consequence of, whose order such weight or traffic has been conducted. It is entirely a question of fact in each case what constitutes extraordinary traffic, e.g. military manoeuvres, the erection of a mansion or factory in a remote rural dist., excessive weight of a single wagon drawn by a locomotive, may each constitute or

result in extraordinary traffic. It is not easy to reconcile the cases on the subject, but apparently the true test for determining whether traffic is extraordinary depends on what is ordinary traffic on the particular road, not on what other and even similar roads in the neighbourhood have borne without injury. To obstruct a H. is a criminal offence, and any member of the public may remove the obstruction. The owner of any animals which stray upon a H. (not running over common or waste land) is liable for damage occasioned thereby to adjoining property. By the Road Transport Lighting Act, 1927, every vehicle on any road was required, during the hours of darkness, to carry two lamps, each showing to the front a white light and one lamp showing to the rear a red light, and all the lights must be visible from a reasonable distance. There were special provisions as to bicycles, tricycles, and invalid carriages; bicycles not propelled by mechanical power were not required to carry a lamp showing a red light to the rear if an efficient red reflector is shown instead; and, generally, in these special cases, a single front white light was sufficient. But on the introduction of the 'black out' in Great Britain at the beginning of the Second World War a 'live' rear light was made obligatory for bicycles, etc. and the regulation has not been withdrawn. As regards horse-drawn vehicles, the separate red light is not necessary if the front lamps serve the same purpose and provided no part of the vehicle or its load extends more than six feet behind such lamps. 'Darkness' in this context, means, as respects summer time, the time between one hour after sunset and one hour before sunrise, and, as respects the remainder of the year, the time between half-an-hour after sunset and half-an-hour before sunrise.

**Maintenance of highways.**—Important changes in the law of Hs., particularly in relation to the responsibility for maintenance and improvement, were made by the Local Gov. Act, 1929; but these changes do not extend to the administrative co. of London. Under this Act roads are divided into 'county roads' and 'ordinary highways,' and into 'classified' and 'unclassified' roads, and these distinctions are made for the purpose of fixing the responsibility for maintenance. An 'ordinary' H. may become a co. road by an order of the co. council, or by an order of the minister of transport made on appeal by a dist. council from the co. council's refusal or failure to make an order. Briefly, all Hs. in rural dists. and main or classified roads in urb. dists. are co. roads; and neither the maintenance and repair of a co. road by an urb. dist. council nor the delegation of functions in respect of a co. road to a dist. council will result in the road ceasing to be a co. road. A road in the Act of 1929 means a road classified by the minister of transport for the purpose of the Act. Since 1936, however, there has been introduced a third category of H.—the 'trunk roads.' By the Trunk Roads Act, 1936, the minister of transport became the authority for 'the

prin. roads in Great Britain which constitute the national system of routes for through traffic.' But no road within the co. of London or within any co. bor. is included in the category of trunk roads. The roads which became trunk roads are listed in the first schedule to the Act; the total mileage of trunk roads in Great Britain is now 4,500, and the minister of transport is responsible for their maintenance and improvement. The minister may, however, by agreement with any co. council or co. bor. council or urb. dist. council delegate to these councils, all or any of his functions with respect to the maintenance and repair and improvement of any trunk road; but such functions may not be delegated to a bor. or urb. dist. council with respect to any road outside the bor. or dist.; nor, except with the consent of the co. council in which the road is situated, may the minister's functions be delegated to the co. council with respect to any road outside the co. Even where there is delegation, the council merely acts as agent for the minister and in accordance with prescribed conditions, particularly in relation to securing ministerial approval for works expenditure. It is for the co. council or other appropriate local authority to exercise the statutory functions, in relation to trunk roads, prescribed by the Restriction of Ribbon Development Act, 1935, unless they have relinquished those functions in the manner provided by the Local Gov. Act, 1929 (section 32).

To the minister of transport the Act of 1929 transferred all powers and duties of any gov. dept. in relation to (*inter alia*) roads, bridges, ferries, vehicles and traffic thereon, with certain exceptions; but the Board of Trade retains all its powers and duties under any local, special, or private Act, and the minister of health retains all his powers and duties in regard to sanctioning plans by local authorities, under the Housing Acts, and in respect of the confirmation of by-laws. But the minister of transport has succeeded to the powers of the Road Board under the Development and Road Improvement Funds Act, 1919. By the Local Gov. Act, 1929, the rural dist. councils have ceased to be the highway authorities, and the co. councils have taken their place; but the rural dist. council retains 'functions,' which include powers and duties under the Local Gov. Act, 1894, as to rights of way, and encroachments on roadside wastes. The rural dist. council may also have certain functions of the co. council delegated to them as to maintenance and repair. The words 'County Council' in the Act of 1929 do not include co. bor., and for ordinary Hs. within a bor. the bor. council is the H. authority. Where an urb. dist. has a pop. of more than 20,000 the dist. council may claim to exercise the functions of maintenance and repair of any co. road, not including bridges, within their dist. The dist. council may act as agents of the co. council. The co. council may themselves place a road in repair or notify the dist. council to do so within a reasonable time, and such notice may be given whenever

the co. council are satisfied on the report of their surveyor that repair is required.

**Road Traffic Acts.**—The ever-increasing use of motor vehicles on H. has led to the passing of many Acts to regulate such traffic. The Road Traffic Act, 1930, consolidated the law by repealing some thirty earlier Acts, and made numerous amendments and new provisions to keep abreast of the rapid development and universal use of motor vehicles. Motor vehicles used for the carriage of goods are dealt with under the Road and Rail Traffic Act, 1933. The minister of transport has wide powers of making regulations under the Road Traffic Acts. The ministry has compiled a Highway Code as authorized by statute. It is issued with driving licences, and copies may be obtained from the Stationery Office. It is intended as a guide to persons using the road, and may be revised from time to time. Failure to observe the code is not an offence in itself, but it may be relied on as tending to establish or negative the liability of a party to any legal proceedings. Under the Act of 1934 the minister of transport may establish crossings for foot passengers or make regulations as to the precedence of vehicles and foot passengers and, generally, as to traffic movement at or near a crossing and erect traffic signs in connection with the crossings and may call upon local authorities to submit schemes for providing such crossings. This Act also provides a general speed limit of 30 m.p.h. in 'built-up areas.' Speed limits for classes of motor vehicles other than ordinary passenger motor cars are prescribed in the same Act. The minimum ages for drivers of motors are: for motor-cycle, 16 years; for private car, 17 years; for vehicle weighing 2½ tons unladen (or over), 21 years. No person may use, or permit to be used, a motor vehicle unless covered by a policy of insurance in respect of third-party risk. Under the Act of 1934 it is the duty of insurers to satisfy claims in respect of third-party risks notwithstanding provisions in the policy entitling them to avoid liability, unless the policy was obtained by misrepresentation. Full provision is made in the Act of 1930, for the regulation of public service vehicles. The use of certain roads and bridges by goods-carrying motor vehicles is also controlled by the Road and Rail Traffic Act, 1933. Every motor vehicle, excepting motor-cycles, must be fitted with a reflecting mirror.

See Pratt and Mackenzie, *Law of Highways* (18th ed.), 1932; *The Complete Statutes of England, or Halsbury's Statutes of England* (2nd ed.), 1919 ff.; S. and Beatrice Webb, *The Story of the King's Highway*, 1920; W. J. Hadfield, *Highways and their Maintenance*, 1934; G. Bouniephrey, *British Roads*, 1942; C. W. Scott Giles, *The Road Goes On*, 1946; R. Jeffreys, *The King's Highway, 1838-1913*, 1949; Madge Jenison, *Roads*, 1919.

**High Willhays**, hill of Devon, England, the highest point on Dartmoor (2039 ft.) It lies 4 m. S.W. of Okehampton.

**High Wycombe**, see WYCOMBE.

**Hilumaa**, see DAGÖ.

**Hilarion**, St. (c. 290-372), abbot, founder of the monastic system in Palestine. He was b. at Tabatha, and while studying at Alexandria, became converted to Christianity. About 306, through the influence of St. Anthony, he became a hermit, and lived in the deserts bordering on Egypt, and finally d. in Cyprus. The chief authority for his life is St. Jerome.

**Hilarius** (or Hilary), St. (c. 320-368), bishop of Poitiers, b. in Limonum (Poitiers) of pagan parents, and was converted to Christianity through his own studies. He was banished to Phrygia by the Emperor Constantius for his vehement controversies with the Arians. He visited numerous churches in Asia Minor, and ultimately returned to Poitiers still undaunted. His most important work is *De Trinitate*. See J. G. Cazenove, *St. Hilary of Poitiers and St. Martin of Tours*, 1883.

**Hilary**, or Hilarius, surnamed *Diaconus*, deacon of Rome, b. in Sardinia. In 350 he was sent to the Emperor Constantius by Pope Liberius on a special mission to uphold orthodoxy against the Arians at the council of Milan. His opponents scourged and exiled him, with the result that his views were strengthened. Two treatises imputed to him are usually incorporated with the one with Augustine's, the other with Ambrose's works.

**Hilary** (d. 168), pope, successor of Leo I. (461), a native of Sardinia. He was created archdeacon by Leo I., and



POPE HILARY

rigorously upheld the supremacy of Rome. When pope, he improved and enriched the monasteries and churches which had been damaged by the Vandals.

**Hilary**, St., of Arles (401-449), b. in a tn. between Lorraine and Champagne, brought up in the monastery of Lérins. He became bishop of Arles, and later deposed the bishop of Besançon, which seriously embroiled him with Leo I.

**Hilda**, or **Hild** (614-680), patroness of Whitby. She was abbess of Hartlepool

or Heorta (c. 650). She ruled for twenty-two years the monastery for monks and nuns at Whitby (Streonshalh), which she had founded in 658.

Hildburghausen, tn. of Thuringia, on the Werra, 19 m. S.E. of Meiningen. It was formerly (1683-1826) cap. of the duchy of Saxe-Hildburghausen. Pop. 6900.

Hildebrand, see GREGORY VII.

Hildebrand, Adolf E. R. von (1847-1921), Ger. sculptor; b. at Marburg; son of Bruno H., writer on economics. Studied at Nuremberg and Munich, worked in Berlin. Studied in Rome, 1867-8; exhibited bronze statuette, 'Sleeping Shepherd Boy,' Vienna Exhibition, 1873. Lived in Florence, 1874-92; working chiefly at portrait sculpture—roigning princes being among his subjects. He designed fountains at Munich, Jena, Worms, and Strasburg.

Hildegard, St. (1098-1179), visionary, seer, and an appreciated writer, b. at Bockelheim, Germany. She is called the Sibyl of the Rhine, and was abbess of the nunnery of Disibodenberg, Lorraine, at which she was brought up. She founded the abbey of St. Rupert, near Bingen. See life by J. P. Schmelzer<sup>4</sup>, 1879.

Hilden, tn. of Rhineland, Germany, 3 m. S.E. of Düsseldorf. It manufactures velvet, silk goods, carpets, machinery, etc. Pop. 20,000.

Hildesheim, tn. and episcopal see of Hanover, Germany, situated at the foot of the Harz Mts., on the R. Innerste. The Rom. Catholic Cathedral, which dates back to the eleventh century, noted for the beautiful bronze doors executed by Bishop Bernward, was badly damaged, and its cloisters partly destroyed in the Second World War. It holds the sarcophagus of St. Godehard, and the tomb of St. Epiphanius. There are also the Romanesque church of St. Godehard, built in the twelfth century, and the church of St. Michael (burnt out), founded in the eleventh century. Besides these, are the fifteenth century (burnt out) Rathaus, and the Wedekindhaus (1598), and the St. Michael Monastery, now a lunatic asylum. The guild-house of the butchers (1529), a fine example of a wooden building was destroyed by bombing. The chief productions are sugar, tobacco, stoves, and machinery. H. was the seat of a bishopric from 822, and was one of the original members of the Hanseatic League. A unique collection of Rom. silver plate of the time of Augustus was found on the Gaisenberg, E. of the tn., in 1868. Pop. 62,500.

Hill, Aaron (1685-1750), Eng. writer, b. in London. On leaving Westminster School he travelled in Turkey, on which he pub. *A Full and Just Account of the Present State of the Ottoman Empire* (1709). His contributions to the drama include: *Elfrid or the Fair Inconstant* (produced at Drury Lane in 1709), *The Tragedy of Zara* (1735), and *Meropé* (1749). He was included in Pope's *Dunciad*, and retorted in *The Progress of Wit, being a Caveat for the use of an Eminent Writer* (1730). His *Works*, including poems and letter were

pub. in 1753, and his *Dramatic Works* in 1760. See H. Ludwig, *The Life and Works of Aaron Hill*, 1911; and A. Dobson *Rosalba's Journal and Other Papers*, 1915.

Hill, Ambrose Powell (1825-65), Amer. Confederate general; b. in Culpeper co., Va.; son of Maj. Thomas H. Graduated, U.S. Military Academy, 1847. Fought at Williamsburg, Richmond, and second battle of Bull Run. Received surrender at Harper's Ferry, Sept. 17, 1862. Commanded: Div., Fredericksburg, Dec. 13, 1862; Reserve, Chancellorsville, May 2-4, 1863 (wounded); one of three corps into which Lee's army divided May 10, 1863. Engaged at Gettysburg, Bristow Station, Weldon Railroad. Near Petersburg April 2, 1865, shot from his horse and killed.

Hill, Clement (1877-1945), Australian cricketer. Considered by many qualified judges of the game to have been the best left-handed batsman ever known in the hist. of cricket. On all wickets and against any bowling combination, 'Clem' Hill controlled match after match in which he took part. Showed great promise as early as 1891-95 when he scored 150 (not out) and 56 for S. Australia against A. E. Stoddart's team. Came to England with G. H. S. Trott's team in 1896, being one of the mainstays of a famous eleven and surpassed in scoring ability only by Sid Gregory and J. Darling. Against Stoddart's second team in Australia in 1897-98 he scored 829 runs in 12 innings, his record being better than that of either A. C. MacLaren or K. S. Ranjitsinhji. Scored 200 for S. Australia in that season, but his greatest innings was in the fourth test match, at Melbourne, when he made 188 runs out of a total of 323, against the bowling of J. T. Hearne and J. Briggs. When the Australians visited England in 1899 he headed the batting averages, his aggregate including a score of 135 at Lords. In 1901-02 against A. C. MacLaren's team in Australia he averaged 52 in ten innings in Test matches. He was also leading scorer of J. Darling's team in England in 1902, but on return to Australia was at length outrivalled by Victor Trumper. In 1907, however, against A. O. Jones's team he played a great innings of 160 at Adelaide. Possibly his surest quality was an ability to master any ball bowled on the leg stump; he was also a brilliant fielder.

Hill, Daniel Harvey (1821-89), Amer. Confederate general. Graduated, W. Point, 1842. Prof. of Mathematics: Washington College, Lexington, Va., 1848-54; Davidson College, N.C., 1854-1859; won battle of Big Bethel, June 10, 1861. Brig.-Gen., commanded left of army, Leesburg, Va. Fought McClellan: Seven Pines, Fair Oaks. Lt.-Gen., July 1863. Chickamauga, Sept. 19-20, Bentonville, N.C., March 1865. Laid down arms, Durham Station, April 26, 1865. Wrote: *Elements of Algebra* (1858); religious tracts; articles on Civil war.

Hill, George Birkbeck (1835-1903), Eng. literary critic, educated at Bruce Castle School and Pembroke College, Oxford. In 1868 he succeeded his father as head-

master of his old school, and, like him, proved averse from exercising any kind of coercion on his pupils. A contributor to the *Saturday Review* (1869-84), he pub. after his retirement from teaching (1877), a series of scholarly eds. of Johnsonian literature, including *Boswell's Life of Johnson* (1887), and *Dr. Johnson, his Friends and Critics* (1878). His ed. of Johnson's *Lives of the English Poets* was pub. in 1905, with a memoir by H. S. Scott, and a bibliography.

Hill, James Jerome (1838-1916). Amer. railway president, b. near Guelph, Ontario. He graduated at Yale Univ. and then worked in railway offices in St. Paul, Minnesota. In 1870 he formed the Red R. Transportation Co., between Saint Paul and Winnipeg, and was the founder of a syndicate which built what is now the Canadian Pacific Railroad. He was president of the Great Northern Railway, which he helped to build, from 1895 to 1907, and made of it one of the greatest railway systems in the U.S.A. It ran a steamship line to China and Japan. In his later years he was recognised as one of the leading railway authorities in the U.S.A.

Hill, Sir George Francis (1867-1948). Eng. numismatist, antiquary and historian b. at Berhampur, India, son of Samuel John H., a missionary. Educated at Blackheath school for sons of missionaries (later Eltham College), Univ. College School and Univ. College, London, thence as an exhibitioner at Merton College, Oxford, of which he became an honorary fellow in 1931. Ant. hist. was his main subject, and he became a pupil of Prof. Percy Gardner, from whom he acquired his interest in numismatics. In 1893 he was appointed to the dept. of Coins and Medals, Brit. Museum. In 1897 appeared his first vol. in the great Gk. catalogue there, five others following in the next 25 years, covering the Middle East. These catalogues set a new standard for numismatics in their marshalling of evidence, discussion of problems involved, and accuracy of description. Editor of the *Journal of Hellenic Studies* and of the *Numismatic Chronicle* for many years. His study of It. hist. and art resulted in learned works on Pisanello and the *Corpus of Italian Medals before Cellini* (1930). His appointment as director and principal librarian of the Brit. Museum (1931-36) was marked by the acquisition from the Soviet Gov. of the *Codex Sinaiticus* (q.v.) and of the Eumorfopoulos collection of Oriental antiquities, the latter shared with the Victoria and Albert Museum. He spent his retirement in writing a hist. of Cyprus (1940-48) carrying the story of the is. down to 1571 with much detail on the Lusignan dynasty. K.C.B., 1933. Vice-President of the Society of Antiquaries and a member of the Royal Commission on Historical Monuments.

Hill, Sir John (c. 1716-75), Eng. author, b. at Peterborough. He set up an apothecary's shop in St. Martin's Lane, London, became editor of the *British Magazine* (1748-50), and contributed to the *London Advertiser and Literary Gazette*. He also

pub. a trans. of Theophrastus's *History of Stones* (1740), and wrote many botanical works, including *The Vegetable System* (26 vols., 1759-75).

Hill, Octavia (1838-1912), Eng. social reformer, was educated at home. Encouraged by Ruskin, she bought three cottages in Marylebone (1864), and was so successful in increasing the self-respect and improving the material welfare of her tenants that the Countess Ducie gave into her charge a property in Drury Lane. Latterly, she was at the head of a staff of assistants who, between them, collected the rents of 6000 dwellings and tenements in the metropolis. Pubs. include *Homes of the London Poor* (1875) · *Our Common Land* (1878).

Hill, Rowland (1744-1833), Eng. preacher, the sixth son of Sir Rowland H., first baronet, b. at his father's seat, Hawkstone Park, Shropshire. Educated at Shrewsbury and Eton, and whilst still young received deep religious impressions from his eldest brother Richard. Entered St. John's College, Cambridge, in 1764, and whilst there visited the sick and prisoners and preached wherever he could. In 1769 he graduated B.A. with honours, and endeavoured to obtain orders. Ordained June 1773 to the curacy of Kingston, Somersetshire, but refused priest's orders on account of his unconventional style. He continued to preach to immense congregations. In 1783 Surrey Chapel was built for him, which remained the ordinary scene of his labours till the end of his life, and under its pulpit he was buried. H. was deeply interested in Sunday-schools, and there were thirteen attached to Surrey Chapel with over 3000 scholars. He took a prominent part in all philanthropic and religious movements, and his earnest, eloquent, and eccentric preaching attracted large congregations. See life by Rev. Edwin Sidney (4th ed.), 1861.

Hill, Rowland, first Viscount (1772-1842), Brit. general, nephew of the preacher Rowland Hill, was b. at Pries Hall, near Hawkstone. He commanded the 90th Regiment in Abercromby's Egyptian expedition (1801), and served throughout the Peninsular war as Sir Arthur Wellesley's ablest coadjutor. He captured the forts of Almaraz, for which he was created baron (1814). He distinguished himself by his brigade charge at Waterloo, and succeeded Wellington in 1828 as commander-in-chief. See life by Rev. E. Sidney (1815).

Hill, Sir Rowland (1795-1879), originator of the penny postal system, b. at Kidderminster. As a boy he was interested in mathematics, and later in life became engaged in mechanical inventions. His ideas on a uniform rate of postage, regardless of distance, were pub. in pamphlet form, *Post Office Reform* (1837). In 1839 he was attached to the Treasury, and his schemes were realised in the following year. He was dismissed from office when the Conservatives came into power (1841), but on the return of the Whigs was appointed secretary to the Postmaster-General (1846). In the same

year he was presented with £19,960 as a public appreciation of his services. See *Sir Rowland Hill, the Story of a Great Reform*, by his daughter, 1907.

**Hillah**, **Hilla**, or **Hellah**, tn and liwa (prov.) built of materials from the ruins of Babylon near by. It is on the Euphrates 60 m S of Baghdad, Iraq. H. is a resting place for pilgrims to Meshhed Ali and Meshhed Hussein. It manufactures cotton silk and woollen goods. Near H., in 1920 some 300 men of the Manchester Regiment were massacred by Arabs in the course of a rising against British mandate rule (see IRAQ). Pop. (liwa) 263,000 (tn.) 30,000.

**Hillel**, called **Hazaken** (the Elder) and **Hirababli** (the Babylonian) (c. 75 B.C. - A.D. 10), Jewish rabbi, was a native of Babylon. When he was already verging towards old age, he began to study law under Shemaiah and Abtalion in Jerusalem, and soon grew famous for his profound learning when by according to the Talmud, he comprehended all tongues even those of trees and beasts. Being well high priestliness, his learning was only acquired by exceptional zeal and self-denial. It is unlikely that he was ever president of the Sanhedrin yet his humility and loving kindness and what has been described as the 'sweetness and light' of his personality ensured the popularity of his teaching which, like that of Jesus, was everywhere from sacerdotal traditionalism and blind adherence to legal ordinance.

**Hiller**, **Ferdinand** (1811-87) German musical composer, b. at Frankfurt on Main, played a concerto of Mozart at the age of



FERDINAND HILLER

ten, and in 1827 was present at the deathbed of Beethoven. He visited Weimar, Vienna (with Hummel, his master), Paris (where he lived from 1828-35), Italy, St. Petersburg, and England, etc. From 1850 till his death, he was municipal capellmeister at Cologne, where, besides organising

the Conservatoire, he composed, conducted, wrote, and taught, Max Bruch being his most famous pupil. Among his wide circle of friends were Berlioz, Mendelssohn, Cherubini, the Schumanns, Spohr, Liszt and Chopin. His numerous compositions include chamber orchestral, and vocal music. These display conspicuous inequalities, but since his first published oratorio entitled *Die Jersörung Jerusalems* (1839), has been recognised as a masterpiece. In Paris he was celebrated for his fine interpretation of Bach and Beethoven.

**Hill Figures**, see **WHITE HORSES**.

**Hill-forts** are, as their name implies, fortifications erected on the top of a steep cliff or mountainous crag. The summits of hills like is and fens, were peculiarly adapted to serve as the last refuge of a native race in a country invaded by a stronger people. So H. are found of great antiquity, constructed by uncivilised peoples, as D. Wilson says, 'the simple circular H. wherein we have the mere rudimentary efforts of a people in the infancy of the arts.' To this category belong the rude earthworks found on the top of many peaks in the Brit. Isles. Scotland is especially rich in H., many of which are of a somewhat more advanced type. Two or three concentric circular ramparts defend the summit of the hill, so that as the invading party stormed one line of defence the defenders might retire gradually into their innermost stronghold. The H. which is at the summit of White Caterthun in Dorsetshire may be described in some detail as being typical of many others. The hill in question is 976 ft. high. The first resistance to an attacking force is offered by a double entrenchment 200 ft. below the summit. The formation of the cliff then precludes further advance save on one side. The end of this path leads to an oval rampart of stones 436 ft. by 200 ft. The width of the walls in which are found chambers, as in the Irish castles (q.v.) is 26 ft. Among other H. in the Brit. Isles may be mentioned Arbury in Leicestershire, Dun Murray in Argyllshire, and Dun Argyll in the Aran Isles. In many cases of course a H. was the residence and headquarters of a warrior chief or a robber baron, as in the medieval ages. In this class come the H. of the wild tribesmen of Afghanistan and the N.W. frontier of India. For the vital location of the stones of H., see **under** **VIRGIFIED FORTS**. See Dr D. Christison, *Early Fortification in Scotland*, 1818; F. J. Burrow, *Ancient Earthworks and Camps* 1924.

**Hillgrove**, gold and antimony mining tn on Bakara Creek, Sandown co., 80 m. E. of Armadale, New South Wales. Pop. 00.

**Hillhead**, Sootland, a suburb to the N.W. of Glasgow. Pop. 4000.

**Hilliard**, **Nicholas**, miniature painter and goldsmith painted Queen Elizabeth and Mary Queen of Scots, and for twelve years enjoyed the exclusive privilege of executing portraits of James I. and other members of the royal family. Charles I. counted among his art treasures a jewel

of H.'s workmanship with an enamelled picture of the field of Bosworth, and the likenesses of four sovereigns. See J. Pope-Hennessy, *A Lecture on Nicholas Hilliard*, 1949.

**Hillsborough, or Hillsboro**, cap. of Hill co., Texas, U.S.A., 50 m. S.W. of Fort Worth. It is served by three railways and also by the Texas Electric Interurban. It manufs. cotton, hosiery, leather, flour. Pop. 7700.

**Hillsborough**: (1) tn., Alberta co., New Brunswick, Canada; on Petitcodiac R. There are valuable granite-gypsum quarries and coal mines near. Pop. 1000. (2) par. and mrkt. tn., N. of co. Down, Ireland, 12 m. S.S.W. of Belfast. Its chief industry is linen manuf. Pop. 2000. Rural dist. 22,000. (3) Chief tn., on the coast of Carriacou, an is. N. of Granada, Brit. W. Indies.

**Hillsdale**, cap. of H. co., Michigan, U.S.A., on the R. St. Joseph, 90 m. S.W. of Detroit. Hillsdale College is situated here. It is served by the N.Y. Central Railway. Pop. 6300.

**Hill 60 and Hill 70**. Hill 60 is situated just S.E. of Ypres, and during the First World War was concerned with all the operations towards the E. and S. of that place. Small as the hill was, its elevation gave it command over a considerable expanse of country, and in April 1915 it was the scene of much hard fighting, victory ultimately resting with the Brit. Hill 70 is situated just N. of Loos and E. of Loos. In the 1915 battle of Loos it changed hands during the last week of Sept. Here, again, its height, though little, gave it command over a considerable area, which was particularly valuable from an artillery observation point of view. It was here that the Guards Div. greatly distinguished itself by capturing most of the hill.

**Hill States**, general name for the small native states on the S. slope of the Himalayas in the vicinity of Simla, India.

**Hill Tippera**, Indian native state of about 4000 sq. m., at the extreme E. of E. Bengal, Pakistan, and adjoining the dist. of Tippera. It is for the most part thick forest land, and produces cotton, chillies, and rice. The inhabs. are hill tribes. Argatana, the cap., is 70 m. N.E. of Dacca.

**Hilton, John** (1804-78), Eng. surgeon. He attended Guy's Hospital first as a student and afterwards as demonstrator of anatomy (1828), assistant-surgeon (1845), and surgeon (1849). As president of the Royal College of Surgeons, he gave the Hunterian address in 1867. 'Anatomical John,' as he was called, was joint-founder with Towne of the excellent museum of models at Guy's, and was the foremost anatomist of his day. His *Less and Pain* (1863) is a valued addition to medical literature.

**Hilton, William** (1786-1839), Eng. painter. In 1820 he was elected to the Royal Academy, which to-day possesses his masterpiece, a representation of 'Christ crowned with Thorns' (1823). His other pictures include 'Rebecca and Abraham's Servant' (1829), and 'Edith finding the Body of Harold' (1834).

**Hilversum**, tn. in the prov. of N. Holland, 18 m. S.E. of Amsterdam. It manufs. horse-blankets and carpets. It is a popular summer resort, and its neighbourhood is attractive. It has a large wireless station. Pop. 84,200.

**Himalaya Mountains**, in Central Asia, most elevated highland system in the world. The word Himalaya is Sanskrit, and means, 'Abode of Snow,' the same Aryan root being preserved in the Gk. *himu*, snow, and the Lat. *hiems*, winter. The H. M. stretch from the seventy-second to the ninety-sixth meridian E. of Greenwich, and, with a breadth varying from 180 to 220 m. form a broad, sweeping barrier between Tibet and the Indian peninsula from the W. confines of Kashmir to the E. limits of Assam. Undoubtedly they belong structurally to the great plateau of Central Asia, of which they may be regarded as forming the S. scarp. On the Indian side the slopes of the main ridge are precipitous right down to the marshy 'Tarai' or 'Tariyani.' This is a belt of grassy lands, about 12 m. wide, traversed by many sluggish streams, along whose banks are treacherous morasses covered with tall reeds. It fringes the Pakistan, Indian, and Nepal frontiers for almost 500 m. from W. to E. Towards Central Asia the fall of the H. M. is gentle. Broadly speaking, their direction W. of Mt. Everest, the highest known peak on the globe (29,141 ft.), is N.W. and S.E., but from this height to the boundaries of China the lie is almost due E. It is a mistake to regard the H. M. as a single unbroken chain; they are rather a series of ridges roughly parallel, whose symmetry is confused by a multitude of subsidiary spurs, which strike out from them in all directions.

What is sometimes called the Indian watershed separates into two classes the rivs. which pass out to the Indian Ocean: those which cut a direct way through the mts. on to the plains of India, and those which after being gathered on the top of the tableland reach the sea by two streams which set out at distant points towards opposite limits of the chain. But the great divide, sometimes referred to as the Turkish watershed, is the ridge of the N. range, which is the natural cleavage line between the rivs. which disappear somewhere in the level stretches of Mongolia and Turkestan and those which eventually join the Indian Ocean. The Indian watershed is remarkable for its height, which averages about 18,000 ft. between the Brahmaputra and the Indus. The valleys traversing the highlands from the watershed to the Indian plains are gigantic gorges and offer small encouragement to human habitation. Yet some few, with an elevation of from 6000 to 7000 ft., are fast becoming favourite situations for summer retreats of Europeans eager to escape the sweltering heats of Bengal. Other valleys reach right up into the line of highest summits without rising to a higher elevation than 3000 ft., and thus harbour tropical heat and vegetation at the foot of snow-capped heights. For the most part the valleys slope gradu-

ally till within 20 m. or so of the line of greatest elevation, and afterwards often shoot upward from 5000 to 10,000 ft. within a very small distance.

It is convenient to divide the H. into three sections. The W. begins from that point where the Indus turns southward between Gilgit and Kashmir, a point which is marked by Mt. Nanga-Parbat (26,829 ft.). This section, which also contains Nanda-Devi (25,661 ft.), is not conspicuous in well-marked ranges, but it is



Frank Smythe

#### WEDGE PEAK

One of the peaks of the Kangchenjunga group which rises 8000 ft. above the Kangchenjunga glacier.

crossed longitudinally by sev. valleys which confine the Indus and other rvs. for hundreds of miles before giving them an opening southward. The Central Himalayas contain the highest summits in the world, and comprise the regions of Hindes, Garhwal, and Kumaon, which were scientifically surveyed in 1892. They are sometimes called the Nepal Highlands and extend from the source of the Indus to the Tista—an affluent of the Jumna. The highest group of mts. in the world is in the Karakorum, not in the H. M. Other outstanding crests besides Everest are Kangchenjunga (Kunchinjunga) (28,225 ft., the third highest mt. in the world), on the Sikkim frontier, N. of Darjeeling, and Dhaulagiri (26,286 ft.) in the W. Some conception may be conveyed of the stupendous scale upon which these mts. are built, if the peaks which lie between the seventy-eighth and the eighty-first meridians—a distance under 150 m. in length—or rather their main groups, are enum-

erated: (1) Between the Alaknanda and Bhagirathi, tribes of the Ganges, are the heights of Badrinath, Kedarnath, and Gangotri; (2) the peaks between the Dhaoli and Vishnuganga; (3) Nanda-Devi, Nanda-kot, and Dunagiri between the Gori and the Dhaoli; (4) the Panchchuli cluster between the Gori and the Darma; (5) Yirnamang between the Kall and the Darma; (6) the Api cluster in Nepal. In altitude these summits range one and all from 22,000 to 28,900 ft. Before the highlands of this div. roll down to the plains, there rises a sandy, waterless ridge, known as the Bhabar, whose average elevation is some 4500 ft. This tract is densely forested and absorbs all the streams which flow down from the outer highlands, but as it undulates down to the Tarai the waters are collected together and once more reappear above the surface. The easternmost section covers a great part of Sikkim, Bhutan, and N. Assam. Its loftiest peak is Chomolhari (23,933 ft.), but 16,000 ft. probably represents the mean altitude. There is still a wide field open to ambitious surveyors in this part of the mts., for the lower reaches of the Saipo have never been traced, and little is known of the E. uplands.

There are naturally great variations of climate at different heights and in different regions of the H. M. A comparison between ranges in the W. and E. shows that the latter enjoy a warmer and more equable but also a wetter climate. Moreover, the forest tracts are more widely dispersed in the E., and the area of lands under cultivation is probably less. Both the meteorological conditions and the scenery in the W. are similar to those of S. Europe, provided, that is, that the Himalayan altitude be over 5000 ft. The snow line is much higher on the Tibetan than on the Indian side, because the latter has the greater snowfall. On the S. exposures of the Himalayas there are perpetual snows to within some 15,500 ft. of the sea-level, whilst at the top of the N. tableland of Tibet the snow line is actually as high as 20,000 ft. Precipitation is naturally greatest on the slopes of the outermost spurs, and by the time the limits of Tibet are reached, beyond the line of highest peaks, it is so small as almost to elude measurement. Rain falls between May and Oct., and the season is known as the S.W. monsoon, which is accompanied by moisture-laden winds from the S.W. As regards tem., both the ann. and diurnal range diminish with increase in elevation, whilst the variation of temp. according to altitude is greatest in summer. The rvs. hardly ever freeze, probably because they are too rapid. Glaciers descend much lower on the outer than on the Tibetan slopes. On the valleys of the latter they come down to within 15,000 ft. of the sea-level, but on the S. faces 11,500 ft. is a normal limit. In different parts Alpine, European, and tropical flora abound; the Sal, Toon, Sissoo, and Deodar supply the only timber of commercial value; cereals, fruit, and tea are grown with success up to a height of 7000 ft.



The H. M. afford the supreme illustration of the sublimity and incomparable grandeur of mt. scenery. The reader has only to remember that the mean elevation is some 18,000 ft., and that at least forty heights exceed 24,000 ft., to grant the truth of the assertion that 'the great mt. solitudes of the Himalayas, . . . the apparently endless succession of range after range, of ascent and descent, of valley and mt. top, of riv. torrent, and brook, of precipitous rock and grassy slope, of forest and cultivated land, cannot fail to produce impressions of wonder and awe of such intensity as can be conjured up by no other range in any quarter of the globe.' (F. S. Smytho, *The Kangchenjunga Adventure*, 1930). Numerous expeditions have been organised for exploring the peaks of the H., apart from sev. to Mt. Everest (*q.v.*). As recently as 1936 a small Anglo-Amer. expedition, organised by Prof. Graham Brown reached the summit of Nanda Devi in the Gharwal H., after incredible difficulties (Aug. 29, 1936). This was the greatest feat of Himalayan mountaineering ever accomplished. The two members who reached the summit were N. E. Odell and H. W. Tilman, both Englishmen. Two disasters overtook Ger. attempts to climb Nanga Parbat in 1936 and 1937. In the first many Ger. and native lives were lost in a storm before the higher camps had been properly estab.; the second under Dr. Karl Wien was frustrated by an ice avalanche (June 5, 1937), in which all but one of a party of eight and their six Nepalese porters were overwhelmed. See S. C. Burrard and H. H. Hayden, *Sketch of the Geography and Geology of the Himalayan Mountains*, 1907-08; W. Whistler, *In the High Himalayas*, 1924; A. Albers, *Himalayan Whispers*, 1926; F. S. Smytho, *The Kangchenjunga Adventure*, 1930, *Kamel Conquered*, 1932, and *Camp Six*, 1937; E. E. Shipton, *Nanda Devi*, 1936; H. W. Tilman, *The Ascent of Nanda Devi*, 1937; Paul Bauer, *Himalayan Campaign*, 1937; Sir F. Young, *Heart of a Continent*, 1937; A. Helm and A. Gausser, *Thron der Götter*, 1938; W. Noyce, *Mountains and Men*, 1947. See also under EVEREST, and the various accounts of the Everest expeditions.

Himera, famous ant. Gk. city of the N. coast of Sicily, Italy. In 409 B.C. it was razed to the ground by Hannibal H. was never rebuilt, but the Carthaginians built Thermae, a tn. on the opposite bank of the R. Himera.

Himmeler, Friedrich Heinrich (1765-1814), (Ger. composer, profited much by the patronage of Frederick Wm. II., who, besides giving him a three years' musical education and sending him to Italy for two years of further study, gave him, on Reichardt's dismissal, the court-capellmeistership of Berlin. H.'s *Trauercantate* was especially written for the king's funeral in 1797, and his opera *Alessandro* was the result of a commission from the Czar. But his finest operatic work was *Fanchon, das Leiermädchen* (1801), for which Kotzebue wrote the libretto. Despite their melodic charm, his songs and pianoforte sonatas are rarely performed.

Himmler, Heinrich (1900-1945), Ger. Nazi leader, chief of the Gestapo, b. at Munich of a middle-class family and educated at the High School of Landsbut, Bavaria. At seventeen he joined a Bavarian infantry regiment as a cadet. Leaving the army in 1919 he studied at the Munich Technical College and, later, was employed at a nitrate works; then in 1928 he turned to poultry farming. He was an early member of the Nazi Party of Strasser (see HITLER) and in 1929 Hitler appointed him leader of the S.S., which was then the Black Guard or Hitler's bodyguard. He began early to study systematically the records of the Party chiefs and of their subordinates, and so accumulated a great mass of information about individuals which eventually gave the Gestapo so much power for blackmail. Hitler gave him a free hand in the development of the Black Guard as a strong carefully selected semi-military corps. When Hitler decided on the purge of 1934 (see HITLER), H. and his force were the instruments of assassination. It was, perhaps, H.'s greatest political feat that he succeeded until the Second World War was well advanced in disguising the real purpose of his organisation. The S.S. had already assumed the functions of the police and was controlling the home front as a whole when he acknowledged the fact in 1935. But he remained silent in the face of demands from the Army Command that the S.S. should not interfere in Army affairs, built up a completely independent force—the Waffen S.S. equipped with the most modern weapons—and insinuated his agents into the *Wehrmacht* itself, spreading his tentacles throughout all branches of Ger. life. Besides organising the Gestapo in Germany and beyond the frontiers he estab. a Fifth Column (*q.v.*) wherever the opportunity offered. After the attempt on Hitler's life in 1944 (see HITLER) he was the open master of Germany. He took command of the home army, suppressed the elements of revolt and organised the looting of the *Volkssturm*. When the final Russian offensive approached Berlin in 1945 he headed a section of the defences, and it was he who in the last days of the Reich cap. made overtures for capitulation. The fearful chapter of Germany's reign of terror was primarily his work though it must not be supposed that he did not find numerous and fanatical coadjutors; but his was the baneful master mind behind the horrors that took place in Germany and in the conquered territories. He was the cold and ruthless instigator of reprisals against civilians and of similar crimes. He typified the most extreme element in the forces of Nazi revolution, and caused it to become the predominating force in Ger. politics. Yet in appearance he betrayed nothing of his true character, being small in stature, insignificant looking and shy in manner. It cannot be assumed that his actions were governed solely by blood lust. His motives were deeper. He organised a vast machine of political oppression, and instigated the mass murders in the terrible concentration

camps (*q.v.* and see also BUCHENWALD, BELSEN) of men and women—Gers., Russians, Poles, Czechs—for the sake of what he would have called 'posterity'—not for a Germany victorious in the war but for a Germany 'reborn' through the extermination of all who might stand in the way. This rebirth of the nation was to be achieved through his instrument—a body of Gers. selected for their supposed racial characteristics (*See* ARYAN PARAGRAPHS) and educated by him in the belief that the 'regeneration' of the individual according to National Socialist principles was an essential factor in the enduring dominion of the world; and military conquest by Germany was, in his view, no more than a condition precedent to the foundation of a new ruling class exclusively Ger. and privileged to be the embodiment of the 'Herrenvolk.' His part in the end of Nazism is obscure. With Hitler dead he made his clumsy move for capitulation, trying vainly to play off the W. Allies against Russia. He did not ask that his own life should be spared; that he knew was forfeit. He was captured, after the Ger. surrender, at Bremervörde near Bremen trying to get away with some other Gers. with the aid of false identity papers and more or less disguised. His captors, Brit. security police, took him and his companions to an internment camp for interrogation, and one of the latter disclosed his identity. He was then removed to Brit. Second Army headquarters, but in Lüneburg while being medically examined before being handed over to the appropriate authorities as a war criminal he succeeded in taking cyanide of potassium from a phial concealed in his mouth, dying almost at once.

**Hinckley**, mkt. tn., 13 m. S.W. of Leicester, England. It is an ant. tn. on Watling Street, and has mineral springs. The chief trade is in boots, shoes, hosiery, and coarse pottery. Pop. 36,400.

**Hincks, Sir Francis** (1807-85), Canadian statesman and Brit. Colonial governor; b. in Cork, Ireland; youngest son of Thomas Dix H., LL.D., Presbyterian minister. Received classical education at Fermoy and Belfast. Clerk to a Belfast firm of shipowners, emigrated in 1831, opened warehouse in Toronto. A Liberal, he estab. the *Examiner*, 1833. Elected to first parliament of Upper and Lower Canada 1841, inspector of public accounts, (or receiver general) 1842-43 in the Baldwin-Lafontaine Gov. Defeated in election of 1844, estab. the *Pilot*, Montreal. Again inspector-general, 1848-1851. Jolnt Premier with A. N. Morin, 1851-54. Governor of: Barbados, 1853-1862; Brit. Guiana, 1862-69. C. B., 1862; K.C.M.G., 1869. Returned to Canada; minister of finance, 1869-73. Suffered through failure of a bank of which he was president. Ed. *Journal of Commerce*, Montreal. Made sev. official visits to Washington and London. His gov. rendered important services in the matter of railway building and in negotiating the reciprocity agreement with the United

States in 1854. In the struggling colony, as was Canada a century or more ago, money for the promotion of railways was not easily obtained from the imperial gov. whether to bring the maritime provs. to the lakes or for opening up the W. before the Amers. could get there for their own commercial benefit. Hence the methods of H. as a railway promoter were coarse, but he was a first-rate business administrator in politics, though, being a man of crude sensibilities, he hardly emerges in Canadian hist. as a very interesting figure. The most instructive period of H.'s political life is before 1851, when he was occupying himself in building up the Reform party as the instrument through which responsible gov. was to be secured. On his return to Canada in 1869 he was at once pressed into service by Sir John Macdonald as finance minister—a tribute to his recognised ability. But he had by then lost touch with Canadian affairs and resigned in 1873, and it was six years after that that he became president of the inflated City Bank of Montreal. H. pub. *Reminiscences* of his public life in 1884. In 1907 Stephen Leacock pub. the life of H., in the 'Makers of Canada' series. R. S. Longley's *Sir Francis Hincks* (1943) is not so much a biography as a 'study of Canadian politics, railways, and finance in the nineteenth century.'

**Hinomar** (c. 806-882), archbishop of Rheims from 845; was educated in the abbey of St. Denis, and held the abbacy of Compiègne and St. Germain before he attained to his archbishopric. He was a bitter opponent of Gottschalk, the refractory monk and champion of predestination and exposed his heresies in a series of theological polemics. As metropolitan, he had excommunicated his suffragan bishop, Rothad; by eventually reinstating the offender, he undoubtedly encouraged papal autocracy. Yet in the matter of the sovereignty of Lorraine he boldly refused to countenance Pope Adrian's interference.

**Hind**, name given to the female of *Cervus elaphus*, the red-deer, a ruminant ungulate mammal belonging to the Cervidae; *hart* is the correlative term for the male.

**Hindemith, Paul**, Ger. musician, b. at Hanau, 1895. Studied at Frankfurt. Viola-player and conductor in the Frankfurt Opera House orchestra. From 1927, prof. of composition at the State High School of Music, Berlin. As a composer he is important and prolific in the modern Ger. school, and has written much chamber music, operas, song-cycles, including *Die junge Maid*, and one-act operas, among them *Sancta Susanna* and *Cardillac*.

**Hindenburg, Paul Ludwig Hans von Beneckendorf und von**, (1847-1934), Ger. soldier and President of the Ger. Republic, b. at Posen. He came from the Beneckendorf stock, which took the name of Hindenburg in 1789. The majority of his immediate ancestors had been soldiers, and he claimed himself to be 'the son of a soldier.' His father at the time being a lieutenant in the 18th Infantry Regiment. His mother was the daughter of Surgeon-

Gen. Schwichtart. In 1859 he entered the Cadets' Academy at Wahlstatt and in 1865, became a 2nd Lieut. in the 3rd Regiment of Foot Guards. His first campaign was the Austro-Prussian of 1866, in which he was wounded in the head. He was a deeply religious man, simple and direct, and his conduct during his first spell of active service gave evidence of these qualities. He gained the Order of the Red Eagle (4th Class) with swords for his services. (On the outbreak of the



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PRESIDENT VON HINDENBURG

Franco-Prussian war of 1870-71 he was adjutant of the 1st Battalion of his regiment. He showed his fearlessness in this campaign by carrying out his duties with an utter disregard of the shot and shell flying about him. In 1873 he entered the Kriegsakademie, joined the General Staff in 1878, and was promoted captain. He was posted to the Headquarters Staff of the 2nd Army Corps at Stettin. Here he married the daughter of Gen. von Sperring. He had three children—one son and two daughters. In 1881 he was transferred to the 1st Div. at Königsberg, where he was fortunate to serve under the brilliant and talented Gen. von Verdier du Vernoy, to whom he owed much, and in 1886 he came under the influence of the great Moltke, to whom he was also indebted. In 1889 he transferred to the war ministry, and took over a section of the common war dept. His former chief Gen. von Verdier was war minister at the time. Here he was engaged in drawing up field engineering regulations and details connected with heavy artillery. In 1893 he was appointed to command the 91st Infantry Regiment at Oldenburg. He always endeavoured to cultivate a sense

of chivalry among his officers, efficiency and discipline in the battalions, and a high ideal of service generally. He was particularly happy among the quiet, homely people of Oldenburg, whose manners strongly appealed to him. In 1896 he was appointed Chief of Staff to the 8th Army Corps at Koblenz, to the command of the 4th Army Corps in 1905, and retired from the service in 1911. On the outbreak of the war of 1914, he was not immediately recalled to active service, but the retreat of the Eighth Army in E. Prussia demanded a new commander, and H.'s acquaintance with E. Prussia marked him out for appointment in preference to Ludendorff. Soon afterwards he won the victory of Tannenberg (q.v.) over Samsonoff and, turning against the army of Rennenkampf at the first battle of the Masurian Lakes, routed that general too. He was then promoted to be commander of the Eighth and Ninth Army Group which Falkenhayn was leading against the Russians in Poland. The Ninth Army reached Warsaw but the Eighth was forced to withdraw to the Masurian Lakes again, and it was only when he received the Tenth Army as reinforcements that H. again defeated the Russians at the Masurian Lakes. Already made a field marshal, his fame was now greater than that of von Mackensen, whose Austro-Ger. armies, in the middle of 1915, had driven the Russians out of both Galicia and Poland. In 1916, after the battle of the Somme, he was transferred to the W. front, being given the supreme command of the Ger. Field Army, with Gen. Ludendorff as his First Quartermaster Gen. He organised the retreat to the famous Hindenburg (or first Siegfried) Line, while abandoning the offensive against Verdun. But he won no other great victory and, on Nov. 11, led his armies into Germany, a defeated commander, but with his spirit unbroken and having to his credit the successful planning of a great retreat, followed by an orderly demobilisation. By no means a brilliant strategist, H. was a sound general and steadfast in purpose.

There seems little doubt that his victories were achieved largely with the advice of Gens. Ludendorff and Hoffmann. After the Armistice, he retired to Neudeck. Despite the defeat of Germany, H. remained a legendary figure with the Ger. people, who had never forgotten their Russian invaders. In 1925 he was elected President of the Ger. Republic in succession to Ebert. A monarchist at heart, it was believed that he might support the restoration of the monarchy; but he had a high conception of duty and of loyalty, and he followed a strictly constitutional course, until the economic crisis and the rise of Nazism in 1930 when, now 83 years of age, he became the tool of Junker reactionaries. He effected a *coup d'état* in 1932 and ruled by means of emergency decrees; he became the object of bitter personal attack by Hitler, whom at first he refused to accept as Chancellor. In the year following Hitler's advent to power, he died and was given a national

mausoleum at Tannenberg. His memoirs *Aus Meinem Leben* (1920) show liberality of thought and restraint. See life, 1936, by Major Hindenburg, his nephew.

Hindenburg, see ZABRZE.

**Hindenburg Line**, otherwise **Siegfried Line**, name given to the line of field fortifications taken up by the Ger. armies in their retreat or withdrawal following the battle of the Somme, 1916. The withdrawal was, to some extent, an acknowledgment of defeat on the Somme; but with characteristic resourcefulness, the Ger. High Command had prepared the field fortifications and works of this line so as to constitute it the most formidable defensive system theretofore evolved by the skill of military engineers. Its alternative name, **SIEGFRIED LINE**, was equally designed to inspire the Ger. soldiers to hold the system at all costs; and the fact that the Ger. High Command really believed the line to be impregnable is to be gathered from Orders of the Day, as e.g. No. 111, dated Sept. 18, 1918. Yet even in 1917 the Brit. forces began a drive on Nov. 20 towards Cambrai, which for a time threatened to pierce the H. L. and even to terminate the deadlock on the W. Front. (See also **BOURLON WOOD**; **CAMBRAI**; **FRANCE AND FLANDERS**, **FIRST WORLD WAR CAMPAIGN** IN.) The H. L. was eventually smashed by the Brit. forces in Sept. 1918, following the successful piercing of the line at its strongest point, the Droocourt-Quéant (q.v.) Switch.

**Hinderwell**, par. and fishing vil., N. Riding, Yorkshire, England, 9 m. N.W. of Whitby. There are iron mines. Pop. 2100.

**Hindhead**, extensive hill ridge and common, rising 2 m. N.W. of Haslemere, Surrey, England. Gibbet Hill, the highest point, is 895 ft. To the E. of H. vil. lies the Devil's Punch Bowl. Inval and Weydown Commons lie S. of Gibbet Hill. The greater part of this area of heath and open wood was presented in 1906 by the Hindhead Preservation Committee. Highcombe Copse on the W. side of the Punch Bowl was purchased in 1908 through the W. H. Robertson Memorial Fund, and 14½ ac. of land in the Punch Bowl, known as Highcombe Bottom, were acquired in 1930 as the result of a public appeal.

**Hindley**, township, 2 m. E.S.E. of Wigan, Lancs., England, celebrated for cannel coal. There are iron works and cotton mills. Pop. 18,900.

**Hindmarsh**, suburban post tn. on Torrens R., 2 m. N.W. of Adelaide, S. Australia. Pop. 12,000.

**Hindo**, largest is. of the Lofoten group off the coast of Norway, within the Arctic circle. It is mountainous and somewhat wooded. Digermulen to the S.W. is a port of the Vesteraalen steamers. Area 864 sq. m. Pop. 10,000.

**Hindol**, small trib. state, Orissa, India, 50 m. W.N.W. of Cuttack. Area 312 sq. m. Pop. 380,000.

**Hindustan**, see **HINDUSTAN**.

**Hinduism**, comprehensive term which is used to designate not only the social customs, but the religious beliefs of the majority of the peoples of India. The actual

proportion of the total pop. which comes under the heading 'Hindu' is 65 per cent, and the number of 'Hindus' (census of 1941) is 254,930,500. The creeds and practices of H. differ no less than the organically connected social principles, rendering it very difficult of definition. The close alliance and interaction between Brahmanism (q.v.) and H. make it impossible for a strict line of demarcation to be drawn from a chronological or a sectarian point of view. H. may be said to date roughly from about the sixth century, when the local revolts of the laity against Brahmanic supremacy culminated in Buddhism and Jainism. Until then the authoritative doctrine of pantheistic belief formulated by speculative theologians during the centuries succeeding the Vedic period had held sway; these revolts had the effect of rendering Brahmanism still more tolerant, although its erstwhile severely metaphysical and ritualistic rigour had previously been modified by the currents of Sivaite and Vishnuite thought. The doctrine of the Trimurti, or Trinity, was often put forward under the influence of Upanishad monism. Brahma, the creative principle of the universe; Vishnu, the conservative principle; and Siva, the destroying, but also the generative, principle, are represented as a Trinity of equal and identical deities. Early Brahmanism and Buddhism co-existed down to about A.D. 800 when the latter disappeared from the peninsula, leaving a new Brahmanism, the product of the two philosophies. This modern H., based on the *Puranas* (see *PURANA*) gives less prominence to Brahma than to his associates, Vishnu and Siva. To the vast majority of Hindus some form of either Vishnu or Siva is the highest source of all existence, and the object of supreme adoration. The sub-divs. of the Vishnuite sects range from the broadest pantheism to extreme sectarianism. The cult of Siva affects the two extremes of society: he is favoured by many high-class Brahmans and metaphysical ascetics, and also by the lowest classes. The reason for this is that he is regarded not only as a mystic miracle-working deity, but as a blood-loving, awe-inspiring god. The Sakia movement, the worship of Siva's wife, under various names, as the cosmic energy of the universe, is closely allied to Siva-worship. The whole ground of Hindu sectarianism is by no means covered by these broad outlines; many miscellaneous cults exist which are still included under the general term H. The pantheon of the latter finds room for hosts of minor deities, which are in the main accepted both by Vishnuites and Sivaite. Closely allied and interwoven with all the sects of H. is the system of caste. The infinite variety of caste-divs., each with a social and religious organisation of its own, was evolved from its beginnings in the Vedic age by the Brahmans. For details, see *under* **INDIA**. Although H. has preserved numberless myths, and has incorporated much that is gross and unworthy, it has also gathered many spiritual truths from nature and the universe. Its

main planks, the doctrines of 'Karma' (works), 'Samsara' (wandering, i.e. metempsychosis), and 'Moksha' (release and absorption, or union, with the Infinite) may seem fantastic to the European mind; but the Hindu mind is essentially mystic and transcendental, regarding all finite phenomena as evanescent and illusory, and, if this is remembered, due honour and praise will not be withheld from its vast and beautiful religious literature. In such works as the *Upanishads*, the *Bhagavad-gita*, the *Tamil Saivite* poems, the *Ramayana*, and many

and its general direction is from W.S.W. to E.N.E. As the range turns away from Ab-i-Panja, an affluent of the Oxus, it attains greater elevation, rising sometimes as much as 24,000 ft. above the sea. One of its loftiest summits is Tirach Mir, 25,400 ft., which towers above Chitral and its fort. The passes of Barogil, Agram, and Khartaza, etc., link the Oxus with the Chitral, whilst westwards the chief passes are the Khawak, the Kaoshan (14,340 ft.), the most frequented of them all, the Chahardar, and the much lower Shibar (9800 ft.), after which the



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#### HINDUISM: THE TRIMURTI OR THREE-HEADED BUST

A representation of Siva in the character of Brahma, the Creator, Rudra, the Destroyer, and Vishnu, the Preserver

others, the truth that the pure in heart, of whatever creed or race, shall see God is manifested. Despite their faults they represent a notable progress of the human mind in spiritual and religious evolution. 'They are but broken lights of Thee, and Thou, O Lord, art more than they,' and more than any other religious system. See Sir M. Monier Williams, *Hinduism*, 1877; J. Robson, *Hinduism and Christianity*, 1883; J. Murray Mitchell, *Hinduism, Past and Present*, 1897; L. D. Barnett, *Hinduism*, 1906; C. N. Eliot, *Hinduism and Buddhism*, 1921; L. S. O'Malley, *Popular Hinduism*, 1935; N. Macnicol (ed.), *Hindu Scriptures* (Everyman's Library), 1938; J. Herbert, *La Notion de la vie future dans l'Hindouisme*, 1945; A. C. Bouquet, *Hinduism*, 1919. See also ARYA, SAMAJ, BRAHMANISM, INDIA, SIVA, VISHNU, etc.

Hindu-Kush, name of a mt. chain of Central Asia which, for 200 m from its E. extremity, forms the S. frontier of Afghanistan. It is the great watershed between the Kabul and the Oxus basins,

range is merged into Koh-i-baba. See H. Schomberg, *Between the Oxus and the Indus*, 1935.

Hindu Law is theoretically of divine origin, and cannot be changed by human agency. The books which lay down the law, the Shastras, are of very ancient origin, and the state of society in the time in which they were written was quite unlike that of the present time. Consequently they enact rules which no Hindu follows, and do not give any pronouncement on many things which need regulation. The chief agents in changing the operation and scope of the law are custom and different interpretations, as laid down in commentaries. Legislation has not been employed, although the Brit. parliament and the Hindu legislatures had power to legislate on all matters. In the *Laws of Manu*, it is said that 'the king who knows the sacred law must inquire into the laws of castes or districts, of guilds, and of families, and thus settle the peculiar law of each.' Formerly the only persons whose interpretations of the law

were binding were the writers of commentaries, but the Indian courts will not accept the opinions of modern commentators, although their own rulings are binding. Thus different schools of H. L. have arisen, which may be divided into two main branches, that of Benares (including those of Bombay, Dravida, and Mithila, for W. India, S. India, and Nepal, respectively), and that of Bengal, or Gawinja. The most important books laying down the law are: the *Laws of Manu*; the *Smitri of Yaghavalkya*, and the *Smitri of Narada*. More important still are the commentaries which are not sacred: the *Mitashara of Vijñaneswara*, on the *Smitri of Yaghavalkya*, is the commentary which exercises the most influence, though in the valley of the Ganges the *Dayabhaga of Jimutavahana*, in S. India the *Smitri Chandrika*, in W. India the *Vijñaneshwara Mayukha*, and in Mithila the *Vivada Chintamani* are respectively of importance. See J. D. Mayne, *Hindu Law*, 1892; Jogendra Nath Bhattacharya, *A Commentary on Hindu Law*, 1894; Jogendra Chundar, *Principles of Hindu Law*, 1906; K. P. Javuswal, *Manu and Yajñavalkya: Basic Hindu Law*, 1930.

Hindur, hill state, E. Punjab, some 50 m. N. of Ambala, India. Chief products, opium and grain. Area 250 sq. m. Pop. about 46,000.

Hindus, Maurice Gerschon (b. 1891), Russo-Amer. author; a native of a Russian vil., who became a distinguished Amer. man of letters. He migrated to the United States in 1903 and graduated from Colgate Univ. in 1915. He has frequently revisited Russia and returned there after the Civil war to see the progress of the collectivists' experiment in agriculture, with which, indeed, he was in sympathy. An account of what happened in the course of the collectivisation of the farms will be found in his two very remarkable novels *Broken Earth* (1926) and *Red Bread* (1931), in which latter he describes the collectivisation of his old vil. (see also KULAK). His other novels include: *Humanity Uprooted* (1929), *The Great Offensive* (1933), *Moscow Skies* (1936), and *Sons and Fathers* (1940). His non-fictional studies of Russia include *The Russian Peasant and Revolution* (1920), *We Shall Live Again* (1939), and *Mother Russia* (1943). *Green Worlds* (1938) is an autobiography of his youth.

Hindustan, or Hindostan, means the 'country of the Hindus.' The Persians used to call the R. Sindhu 'Hindu,' and that part of the dist. was therefore called H. The region denoted was gradually extended, until the whole tract of country between the Himalaya Mts. and the Vindhya Mts., W. of Bengal, was so designated. At one time H. was often used as a name for the whole of India, but is now seldom used either with such extended or the old very restricted meaning.

Hindūstāni Language and Literature. H. is the name given by the Eng. to Urdu, an Indian dialect; but H. proper includes the many Indian dialects in existence in Hindustan, such as E. Hindī, W. Hindī, and Rajasthani. Muhammed Hussain Azad

maintains that Urdu is derived from Brīj Basha, a variation of W. Hindī, but it is almost certainly a sister dialect, both being descended from Saur Sentic Prakrit, II, or Urdu, meaning 'camp language,' originally derived this name from being the language spoken by the soldiers camped near Delhi, which was the centre of Moslem rule. It is now spoken in the neighbourhood of Delhi and Meerut. Modern High Hindī was developed from Urdu, but for the many words of Persian origin words of Sanskrit origin have been substituted, Sanskrit really being the original language, and in consequence the literary languages of Urdu and High Hindī have become widely different. Urdu was originally a simple language, sufficient to the needs of the peasants. It did not become a literary language until the sixteenth century, and under the influence of their Mohammedan conquerors the Urdu writers sought inspiration in Persian literature. The Urdu alphabet is practically identical with that of Persian and Arabic, and is written in Arabic characters. Urdu writers borrowed both form and imagery from Persian poetry, while their prose is also largely imitative of Persian prose. During the time of Akbar (1556-1605) it was compulsory that all gov. clerks should know Persian, and from this date the Urdu language became more standardised. From the sixteenth century onwards European languages, chiefly Portuguese and Eng., have also influenced Urdu. In Urdu prosody there is no accent as in Eng., but only vowel quantity. Rhyme (*qafā*) and double rhyme (*radīf*) are greatly used. There are fifteen standard metres, while the prin. kinds of verse are *ghazal*, an ode; *qasida*, a purpose poem; *qita*, a fragment of *qasida* or *ghazal*, but differing from them in rhyme and often used for didactic poetry; *rubai*, a quatrain form; *masnavi*, double-rhymed, used for ballads, epics, and romances; *mustad*, a poem in which a few words are added to each line beyond the length of the metre; *murabba*, rhyming hemistichs in sets of four; *mukhammas*, rhyming hemistichs in sets of five; *musallat* in sets of six and others such as *musabba* in sets of seven. *Wano'kh*, burning backwards, is a love poem in which the poet complains of the heedlessness of his beloved, and *tarikh* is a chronological poem, while *fard* is a single verse used as a quotation. The earliest form of Urdu literature is poetry, and Amir Khusrā is the first known poet, writing in the thirteenth century. The two most celebrated of Urdu poets—Rafi Saadi, the satirist, and Mir Taqi, the narrative poet and sonneteer—lived in Delhi in the eighteenth century. There are three kinds of Urdu prose: *ari*, naked and unadorned; *murajfas*, cadenced, using metre without rhymes; and *musajja*, in which rhyme is used without metre. There are also three kinds of *nastr musajja* or rhymed prose. Early Urdu prose is marred by the frequency of its lingering rhythms, and it was not until the sixteenth century under the influence of Ghalib and Sir Syed Ahmed Khan that

It became free of rhymes and the long, complicated Persian constructions. Fictions, as distinct from romances, together with journalism did not come into existence until the end of the nineteenth century, and then under Eng. influence, while Urdu drama is still in its infancy.

**Hine, Reginald Leslie** (1883-1949), Eng. lawyer and historian of Hitchin, b. at Nownham, Hertfordshire. A scholar of great ability and skill, and a writer and lecturer of charming and gracefully allusive style, who devoted his gifts chiefly to the comparatively limited world of local tn. and co. hist. Hitchin was H.'s special study, to which he gave himself intensively for many years. Beyond it, he had many wide interests: in the co. of Hertfordshire, on whose hist. he was engaged when he died by suicide, and in Eng. hist. and traditions in many directions. His writings include: *Lyra Celtica* (1912), *Dreams* (1913), *The History of Hitchin* (2 vols. 1927-29), *Samuel Lucas, Life and Art Work* (1928), *A Mirror for the Society of Friends, Being the Story of the Hitchin Quakers* (1929), *Hitchin Worthies* (1932), *The Natural History of the Hitchin Region* (1934), *Confessions of an uncommon Attorney* (1945), and *Charles Lamb and his Hertfordshire* (1949).

**Hinganghat** (anc. Innyecotta), tn. of Wardha dist., Central Provs., India, 48 m. S.S.W. of Nagpur. It is the centre of the trade in Wardha valley, which is famous for raw cotton. Pop. about 17,000.

**Hingham**, tn. of Plymouth co., Massachusetts, U.S.A., on Massachusetts Bay, 12 m. S.E. of Boston. It is a manufacturing tn., has an arsenal, and is a popular summer resort. Here is the Derby Academy. Pop. 8,000.

**Hinkler, Bert** (1891-1933), Australian airman, b. in Bundaberg, Queensland; he took to flying and came to England in 1914. In 1928 he carried out a lone flight to Australia in 15 days, covering 10,000 miles. After disappearing on a cross-European flight, his body was found in Italy.

**Hinkson, Mrs. Katharine Tynan**, see TYNAN.

**Hinny**, hybrid offspring of a stallion and a female ass. Compared with the mule, which is the cross between a male ass and a mare, it is more tractable and less obstinate: at the same time it is not so sturdy and is smaller in size. It is less common than a mule, because less useful. See also under MULE.

**Hinojosa del Duque**, tn. 18 m. N.N.W. of Cordova, Spain. There are valuable copper mines, and line and woollen goods are manufactured. Pop. 10,000.

**Hinsley, Arthur** (1865-1943), Eng. cardinal, b. at Carlton, near Selby, Yorkshire. Educated at Ushaw and passed to the Eng. College at Rome. Took a doctorate at the Gregorian Univ. and returned to Ushaw as a prof., 1893. In 1899 he became headmaster of St. Bede's Grammar School, Bradford. Transferred in 1904 to the archdiocese of Westminster as parish priest of Sutton Park. In 1917 he was chosen to be Rector of the Eng. Col-

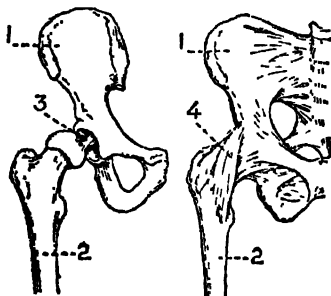
lege in Rome. Created bishop of Sebastopolis *in partibus*, 1926. In 1928 he was appointed to the post of 'Apostolic Visitor to the African Missions in Brit. Territory' and secured the co-operation of the Rom. Catholic missions in schemes of educational reform in all parts of Brit. Africa, being created, in 1930, Apostolic Delegate in Africa and titular archbishop of Sardes. He will be remembered as one of the more significant of those men who have influenced Africa for good, especially as he represented the Pope in the Fr. colonies as well as the Brit. In 1934, after a serious illness, he was created a canon of St. Peter's, but at the age of sixty-nine, was chosen to succeed Cardinal Bourne in the See of Westminster. Went to Rome in connection with the canonisation of the Eng. martyrs Thomas More and John Fisher. At the end of 1937 he was raised to the sacred college with the title of Santa Susanna. Held strong views on the subject of the persecution of the church in Russia, Mexico and Spain, and, later, turned his powerful oratory against Nazi paganism. After the fall of France in 1940 he founded a new society, 'The Sword of the Spirit,' for mobilising Catholics to promote, as a religious duty, the victory of the allied arms, and the reconstruction of Europe. Had an engaging personality, which made him beloved by all who came in contact with him.

**Hinterland**, Ger. word expressing the country which lies at the back of colonies which, in an unexplored continent, naturally grow up near the coast. It is connected with a theory of colonial expansion. Most early settlers, like those in N. America and in Africa, assume rights over a much wider area than that which they have so far developed or explored. Thus those Eng. colonists who had peopled a mere coastal strip arrogantly claimed jurisdiction over vast regions W. of the Mississippi, and were not slow to show their resentment at what they regarded as the iniquitous appropriations of Fr. explorers along that river's course. The theory about the 'hinterland' made a very strong appeal to the Ger. emigrants of Bismarck's day.

**Houen-thsang**, see IWEN T'HSANG.

**Hip-joint**, ball and socket joint (orthopedic), somewhat resembling that of the shoulder but with considerably less extent of movement. The pelvis socket (acetabulum) is considerably deeper than is the case in the glenoid cavity of the shoulder joint. The investing membranes and tissues are also much less lax than those of the upper limb, and in consequence the whole is considerably stronger. The capsule has three well-marked investing bands: (1) The ligament of Bigelow, which is mainly concerned in the maintenance of the erect position of the body, is particularly strong and seldom ruptures, even in cases of the dislocation of the joint. It is in the form of an inverted Y, in which the upper part is attached to the ilium and the limbs of the Y are fastened to two distinct portions of the head of the femur. The other ligaments connect the femur with the pubis

and the ischium respectively. The ligamentum teres or round ligament passes from a slight fossa in the spheroidal head of the femur to the interior of the acetabulum. This ligament, on account of its situation, has been the subject of much discussion. It is absent in some mammals. Gripping the head of the femur is the cotyloid ligament, which lies inside the capsule and deepens the margin of the socket; it is continued as the transverse ligament. The synovial cavity extends along the neck of the femur beyond the limits of the auricular cartilages.



HIP JOINT, FRONT AND BACK VIEW

1. Haunch bone; 2. Femur; 3. Round ligament; 4. Capsular ligament.

**Diseases.**—The H. is peculiarly subject to many of the diseases which attack joints. *Hip disease* has been definitely associated with scrofula, and the symptoms of it usually appear before puberty. Failing satisfactory treatment the disease passes through well-marked stages, and finally dislocation may result from the breaking down of the surrounding tissues, which is frequently accompanied by a fungoid growth from the base of the acetabulum, which growth pushes the head of the femur from the socket; the whole may be rendered immovable (anchylosed), and although cases occur in which a permanent lateral displacement and shortening of the limb are the most serious consequences, yet more frequently the characteristic tubercular infection of the synovial membrane supervenes with dire results. *Accidental dislocation* is not frequent, largely due to the depth of the cavity and the general strength of the joints. In adults such dislocation is often accompanied by a fracture of the head of the femur; its rarity of occurrence is partly neutralised by the much greater difficulty which is experienced in reducing this dislocation. *Congenital dislocation*, which may be double, may be caused by the position of the child during intra-uterine life. The dislocation may not be discovered until walking commences, when the peculiar rolling gait will hint at it. X-ray examination is necessary in order to discover whether a hollow exists

in which the head of the femur may be placed, otherwise the treatment is much more difficult and may even demand the artificial construction of a socket. *Rheumatoid arthritis* often makes its appearance at the H. which, in certain cases, it renders totally inoperative.

Hipparchus, see HARMONIUS.

Hipparchus (c. 160–120 B.C.), founder of scientific astronomy, b. at Nicaea (in Bithynia), and lived in Rhodes and Alexandria. His greatest discovery was that of the precession of the equinoxes, but he also investigated the true periods of the revolution of the moon and of the solar year, and showed how places might be more accurately located on the globe with reference to the lat. and long. of stars. To H. also are traceable the beginnings of trigonometry, both plane and spherical. It is only recently that the true greatness of H. has been appreciated, as Ptolemy had for centuries the credit of his predecessor's observations. See H. Berger, *Die geographischen Fragmente des Hipparchus*, 1870.

Hipparion (Gk. *ἵππιον*, a pony), name of a genus of extinct fossil ungulate mammals belonging to the sub-order Perissodactyla and the family Equidae, and found in the Upper Miocene and Pliocene strata of Europe, N. America, and Asia. This animal is usually regarded as one of the ancestors of the horse, though differing considerably in structure and size. The H. has three toes, the outer digits not reaching the ground, the ulna being better developed than in the horse, and its size is rather less than that of a donkey.

Hipper, von (1863–1932), Ger. admiral. At the outbreak of the First World War he was in command of the 2nd Squadron of the Ger. High Sea Fleet. At the battle of the Dogger Bank (q.v.) in Jan 1915 he commanded the Ger. raiding cruiser squadrons. At the battle of Jutland (q.v.) in May 1916 he was in the *Lützow* as Chief of the Reconnaissance Force, an appointment of great responsibility, which he ably filled. He succeeded von Scheer as commander-in-chief of the Ger. Fleet in Aug 1918, and it fell to him to make the arrangements with the Brit. naval authorities regarding the surrender of the Ger. Fleet. He received the freedom of Wilhelmshaven for his Jutland services. See life by H. von Waldeyer Hartz (trans. by F. A. Holt), 1933.

Hipperholme, par and tn., W. Riding, Yorkshire, England, 2 in. N.E. of Halifax. Quarries and tanneries. Pop. 5300.

Hippias of Elis, Gk. sophist, contemporary with Socrates, who taught in Athens and figures in the *Hippias Major* of Plato as a man puffed up with his own conceit. In learning he was a pedant; in literature a dilettante who tried his hand at every form of composition. Once at the Olympic games he boasted he had made all his apparel and was master of every mechanical as well as liberal art.

Hippius, Zinaida Nicolayevna, (1869–1945), Russian authoress: b. at Bokey, Tula prov. Married, 1889, Dmitry Merzhkovsky (q.v.), and belongs to his 'symbolist' school of poetry—fashionable



in their youth. Works:—three vols. of poetry; five of short stories; novels (e.g. *New People* and *The Devil's Doll*); essays; *La Révolution et la violence—la parole forcée du Tsarisme* (in collaboration with D. S. Merezhkovsky and D. Filosofov, 1907); one play, *The Green Ring* (Eng. trans., 1920); and *My Journal under the Terror* (i.e. in Leningrad after the fall of Tsarism—Fr. trans. 1921).

**Hippocampus**, name of a genus of teleostean fishes belonging to the family Syngnathidae and commonly called sea-horses.

**Hippocras**, or *Vinum Hippocraticum*, old aromatic medicinal wine, prepared from spices, such as cinnamon, ginger, lemon peel and almonds mixed with white wine and sweetened with sugar or honey.

**Hippocrates**, chief genus of the order Hippocrateaceae, and was named after Hippocrates, despite the fact that the species have no medical value. The species are twining shrubs indigenous to the tropics.

**Hippocrates** (c. 460–c. 357 B.C.), celebrated Gk. physician, a native of the is. of Cos. As a youth he is said to have studied the tablets in the temples of the gods, where each person had inscribed the ailments from which he suffered and the means by which he had recovered. At the beginning of the Peloponnesian war he is said to have saved Athens from a dreadful pestilence. Subsequently, on being invited to the court of Artaxerxes, he patriotically refused and said that he must serve his own country. He was given the civic privileges of Athens, and rewarded with the golden crown. He travelled widely throughout Greece, and died at Larissa in Thessaly. His two sons, Thessalus and Dracon, and his son-in-law, Polybus, all followed the same profession. He was a careful and observant physician, and a strong believer in surgery. The presence of disease, he believed, was due to a wrong proportion in the body of the humours, which he classified as phlegm, blood, and black and yellow bile. The chief works attributed to him are: *Aphorisms*, *Prognostics*, and *About Air, Water and Places*. The best known ed. are: *Foissil* (Geneva, folio, 1657); E. Littré (10 vols., 1839–61), with Fr. trans.; *Ermerius*, 1859–63 (with Lat. trans.), and the Eng. trans. of Adams, 1849, and W. H. S. Jones, 1923. See also F. Jevons, *History of Greek Literature*, 1886.

**Hippocrène**, see **HELICON**.

**Hippodamia**, wife of Pelops (q.v.).

**Hippodrome** (Gk. ἵπποδρόμος from ἵππος, horse, and δρόμος, racecourse), course used by the anc. Gks. for chariot or horse racing. It was much wider than the Roman circus, and was usually made on the slope of a hill. Its length varied from 650 to 750 ft., and it was about 450 ft. wide. In shape it was oblong with one semicircular end, and the right side was somewhat longer than the left. Homer gives a fine description of a chariot-race, and shows that the critical point of the race was to turn the goal as sharply as possible, with the nave of the near wheel almost grazing it, and to do this safely.

**Hippodrome**, London, place of amusement which was opened at the beginning of 1900. It affords a good entertainment, which is a combination of that given at a music hall, circus, and hippodrome. A feature of past performances was an aquatic display, for which the building is specially adapted. The arena can be filled with water to a depth of 8 ft., and has a capacity of about 98,000 gallons. In recent years only revues have been produced.

**Hippogriff**, or **Hippogriff**, fabulous animal, unknown to anc. writers, represented in comparatively modern literature as a winged horse with the head of a griffin, and described as the horse of the Muses. It was used by Ariosto in his *Orlando Furioso*, and by many writers of the Renaissance.

**Hippolyte**, in anc. Gk. legend, the queen of the Amazons. She was the daughter of Ares and Otrera, and the sister of Antiope and Melanippe. She headed a troop of Amazons in pursuit of Antiope, but was defeated and fled to Megara, where she died of shame and grief. According to another version, after her defeat she became the wife of Theseus. Still another tradition recounts that Theseus slew her in order to become possessed of her girdle, the gift of Ares.

**Hippolytus**, in anc. mythology, the son of Theseus, by Hippolyte or Antiope. His step-mother, Phædra, fell in love with him, and, on his refusing to gratify her desires, complained to Theseus that he had made attempts on her honour. His father thereupon cursed him and besought Poseidon's aid to bring about his destruction. While H. was riding in his chariot by the sea-shore, Poseidon sent from the water a sea-bull which frightened the horses, so that the chariot was overturned and H.'s body dragged along the ground till he died. According to Virgil, Artemis persuaded Æsculapius to restore him to life, and placed him under the care of Egeria in the grove of Aricia in Latium. He is the hero of Euripides' play of that name.

**Hippolytus** (c. A.D. 160–236), an early Christian writer, supposed to have been born in the East and to have become a disciple of Irenæus. Very little is known about his life. He became a presbyter of the church at Rome in the time of Bishop Zephyrinus (199–217). He disagreed with the succeeding bishop, Callixtus I., with the result that there was a schism, when apparently H. became the head of a separate church and styled himself Bishop of Rome. In 235, during the persecutions of Maximinus, the Thracian, he was exiled to Sardinia, where he died in the following year. Origen ascribed to him the *Philosophumena*, with which has been identified a fourteenth century MS. found in 1842 and published in 1851. His works have been collected by Fabricius (1716–18) and Lagarde (1858). See studies by C. O. J. Bunson, 1852; C. Wordsworth, 1859; J. Dollinger, 1853; H. Achells, 1897; A. d'Ales, 1906; and A. Donini, 1925.

**Hippomane** *Manzanilla*, manchineel-tree, a genus and species of Euphorbiaceæ

which frequents Central America, Columbia, and the W. Indies. It is a tall, handsome tree containing a most venomous milky latex and is among the most poisonous of all known vegetable productions.

**Hippomenes**, son of Megareus, won the Buteian Atalanta by fraud. The swift-footed maiden promised to marry the suitor who should outrun her. He had three golden apples dropped in her path, which she stopped to pick up, thus losing the race. See *ATALANTA*.

**Hipponax** (fl. sixth century A.D.) Gk. iambic poet of Ephesus. He was banished from his native city by the tyrant Athenagoras in 516 and spent his exile in Clazomenae. He was regarded as the inventor of a limping metre called the *choliambus* or *scazon* in which a spondee is substituted for the final iamb of an iambic senarius. His poems are satirical and not infrequently coarse. See *FRAGMENTS* collected in F. Bergk, *Poetae Lyrici Graeci*, and E. Dichtl, *Anthologia Lyrica Graeca*, vol. 1, 1936.

**Hippopotamus** (Gk. for river horse) the sole member of a family of artiodactyle ungulate mammals. It lives in the wild only in Africa, but fossils of a larger breed of hippopotami have been found in England, the rest of Europe and in India etc.



HIPPOPOTAMUS

The common species, *H. amphibius* in habitus, in all parts of Africa, but the smaller *H. liberiensis*, is restricted to the W. of that continent. In fact *H.* is only a little inferior to the elephant. Its legs are very stout so that it belly touches the ground when it walks on mud or other yielding surfaces, there is often as much as 2 in. of skin on the back and flanks, but no hair covers its dark brown hide, its small eyes are set high in the huge, ungainly head with its great snout and

enormous rounded muzzle, the tail is quite short, and on each foot there are four even and hooved toes. The animal is aquatic, nocturnal and voracious. It is a good swimmer and diver and as its respiration is slow, it can stay a long while under water. By day it is sleepy and languid, but by night it often comes out of the water to graze on the banks or if it lives in a cultivated region, it will make substantial inroads into crops and cause great destruction. It is a bad habit which accounts for its disappearance from the fertile plains of the lower Nile. It is sanguine by nature and usually playful and good tempered, but persistent pursuit often provokes a dangerous passion. When angered it emits a loud and piercing noise which has been likened to the grating sound of a creaking door. Hunters chase it in a variety of ways, sometimes it is ensnared in pits, sometimes it is shot or poisoned, or pierced with spears from a canoe. The teeth are valuable as ivory, the tongue, the fat and the jelly from the feet are favourite articles of diet, whilst the hides find many markets.

**Hippuric Acid** or **Benzoyl-glycocol** ( $\text{C}_6\text{H}_5\text{NHCOCH}_2\text{NH}_2$  (OOH)) colourless crystalline substance melting at  $18^\circ\text{C}$ . It is soluble in hot, but scarcely soluble in cold water. It occurs in the urine of herbivorous animals from which it may be obtained by evaporation. It is best prepared by the action of benzoic chloride on glycocol or of chloracetic acid on benzamide. On boiling with dilute acids *H.A.* is hydrolysed to benzoic acid and glycocol.

**Hirado**, or **Firando**, is of Japan in the strait of Korea, lying to the W. of Kjusiu from which it is parted by the *Speex* Straits. It is noted for its beautiful blue and white porcelains (*Hiradoyaki*), and also because the missionary, St. Francis Xavier, worked there and the Dutch once used it as a trading centre (1600-40). It is 419½ m. long and 6 m. broad.

**Hiranyagarbha**, Hindu name for the Creator or First Born, which may be rendered into Eng. as 'Golden Embryo' or 'Golden Child'. To him is addressed an exquisite hymn of the *Rig Veda Samhita*, which is an anthology of sacred songs composed by the *Viras* of India from 1500 to 1000 B.C. The hymn refers to it, which, as poetry runs with the Book of Job, shows how the Vedic philosopher was groping his way towards the Oneness of Deity. *H.* was Brahma who came forth from a golden egg.

**Hire Purchase Agreement**, agreement under which is called the hire system, is a document whereby goods, generally furniture, are delivered to a person by the vendor to be paid for by instalments of rent the goods to become the property of the hirer if he pays the whole of the instalments. By the terms of some agreements the so-called 'hirer' is bound to pay for and purchase the furniture, which is therefore his property *ab initio*, subject to the obligation to pay on easy terms. But usually *Hs.* are so drawn as to reserve the property in the goods in the vendor until all the instalments have been

paid, the hirer, properly so called, being under no obligation to purchase. The disadvantage to the hirer in this latter form of H. is that if he does not keep up his instalments, or exercise his option to purchase, the vendor is entitled to seize the goods and keep the whole of the payments already made to him. Most firms who sell goods on 'easy terms' have printed forms of Hs., and it is essential thoroughly to master the details of the agreement before signing it, so as to avoid liability in the event of inability to keep up instalments. Abuses of the system long excited complaints, and in 1938 an Act was passed giving the hirer protection from unreasonable demands and conditions, and allowing for the termination of an agreement by return of the goods hired after a specified number of instalments has been paid. The Hire Purchase Act, 1938, applies to all Hs. and credit-sale agreements under which the hire-purchase price or total price, as the case may be, does not exceed (a) for a motor vehicle or railway wagon, £50; (b) in the case of livestock, £500; (c) in any other case, £100. Before any agreement is entered into, the owner must state in writing (otherwise than in the note or memo of agreement) a price (the 'cash price') at which the goods may be purchased by the prospective buyer for cash; but this requirement has recently been complied with if the hirer has already inspected the goods and also if they were labelled with the price or he has selected the goods from a priced catalogue. An owner cannot enforce a H. or any contract of guarantee relating to it or any right to recover the goods from the hirer, and no security given by the hirer or by a guarantor for him will be enforceable against the hirer or guarantor unless the requirement as to stating the price has been complied with; and also unless a note or memo of the agreement is made and signed by the hirer and by all other parties to the agreement; and the note or memo must contain a statement of the hire-purchase price and of the cash-price and of the amount of each of the instalments and of the date on which each instalment is payable, and it must contain a list of the goods to which the agreement relates sufficient to identify them. A copy of the note or memo must be delivered or sent to the hirer within seven days of the making of the agreement. The Court, however, has a discretionary power to dispense with some of these requirements if the hirer has not been prejudiced by the failure of the owner to comply with them. There are analogous provisions on the statutory requirements relating to credit-sale agreements where the total purchase price exceeds £5. A hirer can, at any time before the final payment under a H. falls due, determine the agreement by notice in writing to any person entitled or authorised to receive the sums payable under the agreement. He will be liable, without prejudice to any liability which has accrued before the termination, to pay the amount, if any, by which one-half of the hire-purchase price exceeds the total of the sums paid

and the sums due in respect of the hire-purchase price immediately before the termination, or such less amount as may be specified in the agreement. Where the hirer, having determined the agreement, wrongfully retains possession of the goods, then, in any action by the owner to recover them, the Court may order the goods to be delivered to him without giving the hirer an option to pay the value of the goods. Knowingly selling or pledging goods not completely paid for under a H. which does not vest the property in the hirer *ab initio* may render the hirer liable to prosecution for larceny as a bailee. A H. under which the goods remain the property of the vendor till full payment is not a bill of sale within the meaning of the Bills of Sale Acts, and therefore the goods, not being within the hirer's apparent possession, may not be seized in execution (*q.v.*) by the hirer's creditors, and they cannot, generally speaking, be distrained upon for rent owing in respect of the premises in which they may happen to be. The licence to seize frequently inserted in such H. As. merely enables the vendor to retake what is his own property in the event of non-payment. The goods of a bankrupt trader delivered under a true H. or hire-purchase agreement vest in his trustee in bankruptcy and form part of the assets available for his creditors generally, unless there is a well-recognised custom in the bankrupt's trade to hire goods of the kind comprised in the H. A H. requires a *6d.* stamp, and if under seal (*see DEED*), a *10s.* stamp.

**Hirohito** (*b.* 1901). Emperor of Japan, bearing the title Dai Nippon Teikoku Tennō, or Imperial Son of Heaven of Great Japan. Descended from a dynasty that is believed to go back to the middle of the seventh century B.C. Educated partly in England; succeeded his father Yoshihito in 1926. Married Princess Nagako in 1924. Akihito, his eldest son, is Crown Prince. Held the Brit. honours K.G., G.C.B., and G.C.V.O. After the defeat and surrender of Japan in the Second World War, a new draft constitution (Aug. 1946) profoundly changed the status of the Jap. Emperor. The constitution rests on the foundations of the state not, as theretofore, upon divine mandate, but upon the will of the electorate; and it restricts the functions of the Emperor, who becomes a symbol of the State.

**Hirosaki**, tn. in the N. of Hondo, Japan; famous for its apples and lacquered ware. V.uable manganese mines in the vicinity (Iwakura). Pop. about 40,000.

**Hiroshima**, cap. of the gov. of Hiroshima (3000 sq. m.), in Hon-shū, Japan. Situated on the is. and shores of the delta where the R. Otawara falls into the Inland Sea; but, although hills rise to 700 and 800 ft. to the immediate N.W. and N.E., the city stretches over flat ground in all directions for roughly 2 m. from the centre. Before the Second World War it was an important seaport and the centre of a thriving commerce, though with every Jap. and traveller its name was

inseparably associated with the 'Island of Light,' Miyajima, which rises from the picturesque bay opposite. This is of woods and crags is famous for the great temple of the goddess Bentin (begun in 587), which is accounted one of the three wonders of Japan, and was yearly thronged by a multitude of pilgrims. The name of this ill-starred city, however, will go down to hist. as that of the first victim of the terrible atomic bomb. On Aug. 6, 1945, shortly after 8 A.M., an Amer. Super-Fortress flying at 30,000 ft. dropped a single atomic bomb over the city and the bomb exploded over the city centre. The city centre, once the Old Tn., was dominated by a number of reinforced concrete buildings owned by banks, insurance companies, department stores, newspapers, and similar mercantile enterprises. Beyond the Old Tn. lay an industrial zone developed during the early part of this century, and consisting of many small wooden workshops set among dense Jap. houses. A few larger plants devoted to engineering and silk manufacture lay on the S. and W. outskirts of the city. The city was a prosperous trading community having some contacts with the outside world, and its centre was spaciouly planned, with fine streets and temples. Like other Jap. cities, H. was growing rapidly before the war; its census pop. rose from 270,000 in 1920 to 315,000 in 1940. It remained at this figure for the greater part of the war, but began to fall in 1944, and at the time of the attack it was below 245,000. This fall was the result of evacuation, in the main compulsory and accompanied by the systematic destruction of houses to form fire breaks—a programme to which impetus had been given by the great incendiary raids on Tokyo and other Jap. cities in the second week of March 1945, and the process was only partly completed in H. when the atomic bomb fell. The result of the explosion of the bomb was catastrophic and it was soon followed by the dropping of a second atomic bomb on Nagasaki and the ending of the war, towards which the two bombs largely contributed. In H. the bomb exploded above a level expanse of more than 10 sq. m. of wooden houses, destroying over 4 sq. m. first by blast and then by fire. The strong reinforced concrete buildings which dominated the centre of the city usually resisted the blast, but were burnt out. The modern industrial zone outside the city, at 1½ m. and more from the centre of damage, was beyond the range of severe blast. It is officially estimated that approximately 80,000 persons were killed. The severity of the disaster (as also at Nagasaki) was increased by a panic flight of pop., in which even fire and rescue services were abandoned, and which brought communal life virtually to a standstill. The mere clearance of debris and the cremation of the dead trapped in it had to wait a month for the return of the pop. Most striking of the blast effects was the distortion of all types of building as a whole, leaving them leaning as if after a high wind rather than an explosion. Many of the reinforced

concrete buildings at H. were of unusually strong design, intended to resist earthquake. These, even when virtually under the explosion, usually suffered no serious structural damage except some depression of the flat roof, sometimes to saucer shape. As might have been expected from a bomb exploded at such a height, the effect on underground services was insignificant. Similarly, roads and railway tracks were unaffected. Bridges were displaced but usually by very small amounts. For a fraction of a second there was an intense flash from the bomb, the radiated heat from which scorched objects fiercely and to great distances. Among the resulting effects were the roughening of polished granite and other stones, the raising of bubbles on roof tiles, the reddening of concrete, the darkening of asphalt road surfaces which retained the 'shadows' of passers-by at the instant of the explosion, and the scorching of painted and unpainted timbers, of fabrics, and of the human skin. Pregnant women who survived within 1000 yards of the centre of damage had miscarriages; those who survived up to 1½ m. from the centre had miscarriages or premature infants who soon died. Even substantial buildings were penetrated by the gamma rays from the explosion and gave no protection. The ray had the effect of passing through the skin without seeming at first to affect it. It is thought that the gamma rays caused the death of nearly everyone who was fully exposed to them up to a distance of half a m. from the centre of danger. People who were directly under the explosion in the open had their exposed skin burnt so severely that it was immediately charred dark brown or black; those people died within mins. or at most hrs. Both in H. and in Nagasaki, burns on exposed skin were very severe up to about 1500 yds. from the centre of damage. Buildings and walls gave complete protection from flashburn. There was strong evidence that heat radiation was a cause of fires in unscreened buildings, probably up to a distance of a m. from the centre of damage. A number of reinforced concrete buildings with shuttered windows escaped fire, apparently because the heat radiation, travelling at the speed of light, arrived and died away before the blast, travelling only at a few thousand ft. a sec. blew out the shutters to expose the interior. See *The Effect of the Atomic Bombs at Hiroshima and Nagasaki: Report of the British Mission to Japan*, H.M.S.O., 1946. and J. Hershey, *Hiroshima*, 1946. By 1948 H. was to some extent rebuilt. Plans exist, on paper, for making the city a permanent centre of culture and peace. There are to be wide roads, parks and tree-lined boulevards; hotels in the W. style are to be built for foreign tourists, and it is hoped also to build a casino on one of the nearby is. Whether these schemes will ever come to anything is in some doubt, for there is a great lack of building materials and there are virtually no funds, and up to late 1945 the Jap. Gov. had granted only 60 million yen for the work of reconstruction. The

immediate tasks then were road repairing, waterworks construction, and school rebuilding.

**Hirozhige** (Ando Tokitaro) (1797-1858). Jap. landscape painter. True name Ando Tokitaro, he adopted the name of H. conformably to convention in recognition of his being a pupil of Toyohiro. H. was one of the chief members of the *Ukiyo-yo* or Popular School of Painting in Japan (see also HOKUSAI) a school which was especially occupied in making colour prints. H. and his pupils (two of whom adopted the name of H.) applied the process of colour block printing for landscapes with a skill and harmony of effect that have only been equalled in Japan by Hokusai and certainly by no W. artist. Most of the subjects of H. and his pupils were taken from the vicinity of Yedo or were scenes on the old highway between Tokaido and Kioto.

**Hirpne**, one of the hardy tribes belonging to the country of Samnium, E. of Naples, Italy. In 4 B.C. they joined the Samnite alliance; their chief tn. was *Æculanum*.

**Hirsch, Maurice, Baron de** (1831-96), Jewish philanthropist, was by birth a Ger. As partner in the banking house of Bischoff-heim and Goldschmidt, of Brussels, London, and Paris, he amassed a huge fortune. He founded the Jewish Colonization Association, and endowed it with a cap. of £9,000,000 the object of which was to give his persecuted co-religionists of Russia facilities of emigration.

**Hirschberg**, (Polish, *Jelenia Góra*), tn. 1120 ft above the sea-level, 48 m. S.E. of Górlitz (Zgorzelec) in Silesia, Poland, formerly Prussia. Situated at the meeting of the Bober and Zuckau rvs., it is especially noted for its beautiful surroundings. Pop. 30,900.

**Hirson**, tn. on R. Oise, dept. Aisne, France. There are nail and glass works and foundries; basket making is carried on. Hero on Sept. 2-3, 1914, the VII Corps of Gen. Hodges's First Amer. Army crossed the Belgian border in a rapid advance of 40 m. in 2 days. Pop. 10,400.

**Hirtius, Aulus** (c. 90-43 B.C.), Rom. historian, was a friend of Cicero and Cæsar, and the reputed author of the eighth book of the Gallic wars. The narratives of both the Alexandrian and Sp. campaigns are also usually attributed to him. The colleague of Pansa in the consulate of 13, he was slain in the battle of Mutina, though it was Antony his enemy, who met defeat.

**His Majesty's Theatre, Haymarket**, was designed originally by Sir John Vanbrugh, and was opened as 'the Queen's' in 1705. In 1789 it was burnt down, and a second theatre erected which lasted from 1791 to 1867, when it, too, was utterly demolished by fire. It was in this building, which became known as the 'Italian Opera House,' that Madame Rachel appeared in 1841, and here Jenny Lind made her debut. The third theatre dates from 1872 to 1892. It was put to various uses; for Moody and Sankey hired it for revival meetings, and it was also the scene of promenade concerts, Wagner's operas performed by the Carl Rosa Com-

pany, and Fr. plays with Sarah Bernhardt in the cast. Coquelin *and* here played Cyrano de Bergerac in Rostand's play of that name. The fourth theatre was opened in 1897 with Sir Herbert Beer-bohm Tree as proprietor and manager. Under his direction many representations of Shakespeare's plays were staged; while excellent performances of other dramatic works were given, including Stephen Phillips, *Herod* and *Ulysses*, and the Japanese play, *The Darling of the Gods*. *Joseph and His Brethren* appeared in 1913, *David Copperfield*, and Shaw's *Pygmalion* with Mrs. Patrick Campbell and Tree, in 1914. The most remarkable run was made both during and after the 1914-18 war by *Chu-Chin-Chow* (1916-1921), with Lily Brayton and Oscar Asche in the leading parts. Other Eastern plays, such as *Cairo*, *East of Suez*, and *Hassan*, each ran for nearly a year. *Beau Geste* and *Mozart* with Sacha Guitry and Yvonne Printemps as leading performers, were notable theatrical events of 1929. Another long theatrical run was recorded by Noel Coward's operette *Hitler Sweet*, 1929-1931. Later successes are *The Good Companions* (1931); *Conversation Piece* (1934), with Yvonne Printemps; *Balalaika* (1937), *Le Lilac Domino* (1944) and *Brigadoon* (1949).

**Hispaniola**, see HAITI.

**Hissar** (1), cap. of the dist. of H. in the Bokhara Region of the Ozbek S.S.R., Central Asia. It guards the approach to the fertile valleys of the Kafirnihan and Surkhan. Pop. 10,000. (2) The name of a dist. and tn. in the Ambala div. of the E. Punjab, India. The dist. (5217 sq. m.), which is fed by three railways is partly irrigated by the W. Jumna Canal. Sandy for the most part, but in rainy years produces good crops of barley, rice, etc. Ginning and cotton-weaving are carried on in Hissar and Sikra, besides H. Founded in 1356 by the Emperor Feroz Shah. Pop. (dist.) 820,000 (tn.) 25,000.

**Hissar, Aflorim Kara**, see AFLORIM KARA HISSAR.

**Histology**, that branch of microscopic anatomy which deals with the intimate structure of the textures. A differentiation of functions in the higher animals has led to the development of a large number of organs, each composed of various tissues and textures. The result of minute dissociations and microscopic analyses proves that the actual number of elementary tissues, which are distinct in origin and structure, is small, though transition forms are encountered. The general enumeration is as follows: epithelium, or epithelial tissue; connective tissue (many varieties, including adipose tissue); cartilage and its varieties; bone or osseous tissue; muscular tissue, and nervous tissue, to which it is usual to add the elements suspended in the fluids of the body, viz. blood and lymph corpuscles. Many of the organs are formed wholly of one form of tissue, or show but slight admixture; other parts are much more complex in composition, yet in some cases their uniformity of structure leads to their being described along with the elementary

tissues. Examples of these are: blood and lymphatic vessels; lymphatic and secreting glands; serous, synovial, and mucous membranes; and integument—all of which are described in detail elsewhere.

**Histon**, vil. in Cambridgeshire, England, 4 m. from Cambridge. Noted for jam making. Pop. 1600.

**Historical Manuscripts Commission**, The, royal commission which began to sit in 1809. Sir Thomas Duffus Hardy (1804-1878) was influential in obtaining its appointment, as he felt keenly the desirability of some systematic investigation into the collections of valuable MSS. which at present are dispersed up and down the country in the libraries of colleges, corporations, and private individuals. Under the auspices of this commission many records and appendices have been issued, twelve of which deal with the sixteenth-century MSS. in the possession of Lord Salisbury at Hatfield House. This research is valuable in giving to students what would otherwise lie hidden for all time or, as has often happened, find a foreign purchaser. Similar bodies have been founded abroad since the appointment of the H.M.C.

Complementary to the work of this Commission is that of the Brit. Records Association, which is especially concerned with the principles to be followed in deciding whether to keep or destroy modern records. A very large proportion of the historical documents preserved in this country are or have been records or archives, i.e., documents accumulated in the course of organized business, social activity, or domestic affairs, by a natural process of growth, or in other words not consciously collected, and it is this natural process of growth that gives such documents their value as evidence of contemporary facts. It is said that survivals of accumulations of this kind are more numerous in England than in any other country. Such are, e.g., co. sessions records, anct. endowments, and the like. It is obvious that through ignorance there is some danger of the destruction or dispersal of these records or archives, a danger supplemented by their increasing value in the sale room. The generally accepted classification of Eng. archives divides them into public, central and local; semi-public; private; and eccles. The control of these archives has, however, never been centralised in England as it has in most of the greater European countries. The Public Record Office brought together, or arranged to bring together, under one authority the archives of nearly all divs. and depts. of central gov.; but it estab. no relation between this authority and the local, private and eccles. custodians or owners. Nor, generally speaking, has any Act estab. any inter-relations between these other authorities and individuals. The State has in fact intervened sporadically in regard to all the above classified categories of archives, but such intervention in other fields, notably that of Historical Monuments, has been wider and more definite.

The present Royal Commission on Historical Monuments was set up in 1908 and has been at work ever since; but in its first report (1910) it directed attention to the necessity for an executive authority, and this was set up by legislation in 1913 in the shape of an inspectorate forming part of the Office of Works. See *Proceedings of the British Records Association*.

**Historiographer**, writer of history. The title has sometimes been given as a mark of honour by European courts to various learned historians. Thus Racine was H. to Louis XIV., Voltaire to Louis XV. The post of King's H. in Scotland was revived in the eighteenth century and still exists.

**History**, term briefly defined as the story of the past. The meaning of the Gk. word *istoria*, from which it is derived, is 'that which we come to know as the result of an enquiry.' H. is not therefore to be limited to a simple record of what is known or believed to have occurred. H. is more properly concerned to examine, analyse, and explain past events, particularly in human affairs, and in the words of R. G. Collingwood 'to tell man what man is by telling him what man has done.' The oral traditions of primitive peoples which are obscured by mists of legend and of miracle are not so much H. as the sources of H. The written records of more advanced peoples may similarly be but the materials of H. The anc. Egyptians, the Assyrians, and the Chinese possessed extensive records, but they were never analysed or explained or assimilated into a connected narrative; records they remain. It is with the Gks. of the fifth century B.C. that H. begins. They developed a reasoned approach to the past, combined with an ability to analyse the causes, examine the effects, and from the result build up an account of past events. Herodotus gave his work the title of 'a history,' meaning an investigation or enquiry. It is the use of this word and its implications that makes Herodotus the father of H. He not only recounted the conflict between Greece and Persia but set out his interpretation of that conflict as a struggle between oriental autocracy and hellenistic constitutionalism. Similarly, Thucydides in his history of the Peloponnesian war not only described the course of the war but gave an account of the underlying causes.

Since therefore H. is concerned to analyse and explain as well as to describe the events of the past, it is impossible for it not to be coloured by the personality and mind of the historian. Again, only the earliest historians could attempt to record and discuss all the events of which they had knowledge. A later historian must necessarily select those events which he regards as memorable, and the selection which he makes must be a matter of personal judgment. The most clear-sighted historian will make allowance for his personal prejudices in his writing of history, but he will also be the first to admit that H. cannot be entirely free from bias. The standard of values which the historian applies to his

study of the past is determined by the general social, philosophical, religious, and economic ideas of his age, either because he is in accord with the predominant thought of his time or because he is in revolt against it. Thus, the history of the Jewish people in the books of the O.T. became primarily an account of the way of God with the world, while to the Marxist historian the story of the growth of human thought and behaviour is primarily the story of the influence and effect upon man of his economic environment. H. needs to be, as indeed it is, re-written from time to time and past events re-valued in the light of fresh developments and new ideas. In addition, advances in other branches of knowledge bring to the historian new means of discovering the facts of the past and suggest to him new methods of handling his sources. The modern historian of auct. Britain has, for instance, been assisted in his knowledge of his subject by the field-work of the archaeologists and, more recently still, by the development of aerial photography, radiography, and pollen-analysis which have brought to light new facts about auct. settlements. In the nineteenth century the progress of the physical sciences and the development of the scientific method prompted the historian to use new and more critical methods of handling and classifying his material. Lastly, mention may be made of the influence on the historian of the general educational and social standards of the civilisation in which he lives. He is influenced in the style as well as in the subject matter of his work by the society for which he writes. In a society in which all classes are literate, the historian is likely to be influenced in the presentation of his material by the wide range of his potential readers.

For the modern European world the Gk. and Rom. historians stand as the great originals. Herodotus and Thucydides, Livy and Tacitus regarded H. as both a science and an art. In writing down the results of their studies they accepted literary and artistic standards, but they were at pains to collect the facts and submit them to analysis. To the Gks. in particular H. had a definite value in that it led to the formation of right opinion which in their view was as necessary for the conduct of life as scientific knowledge. At the same time they did not develop in their historical thinking any conception of an ultimate goal of human society. They were conscious of continual change in human life but not of any age-long tradition moulding it. The theory of H. which they developed was consequently one of recurring cycles.

With the rise of Christianity as the dominating theory of life the theory of H. and the writing of it changed. By the fifth century A.D. the W. Empire was overrun by the barbarians, and Rome itself had been sacked. Much of pagan literature and learning was lost, and what was still known was regarded with hostility. Human history came to be seen as a series of events essentially condi-

tioned by divine intervention and revelation which could ultimately guide mankind to a definite and desirable goal. This interpretation of H. was first outlined in St. Augustine's *City of God*, and from the fifth to the fifteenth century it continued to be generally accepted. It gave a unity to H. since it presented all significant events as the effect of a single cause—the Will of God. Since the 'city of God' would ultimately triumph and might indeed come suddenly upon the world, what happened to the world meanwhile was of minor importance. Mainly because so few others were literate, monks were the chief (though not the only) historians of the Dark and Early Middle Ages, and the bulk of their works consisted of chronological notes (e.g. the *Anglo-Saxon Chronicle*, and the works of the Venerable Bede and Matthew Paris) while a few educated observers, like Froissart left descriptions of local contemporary events.

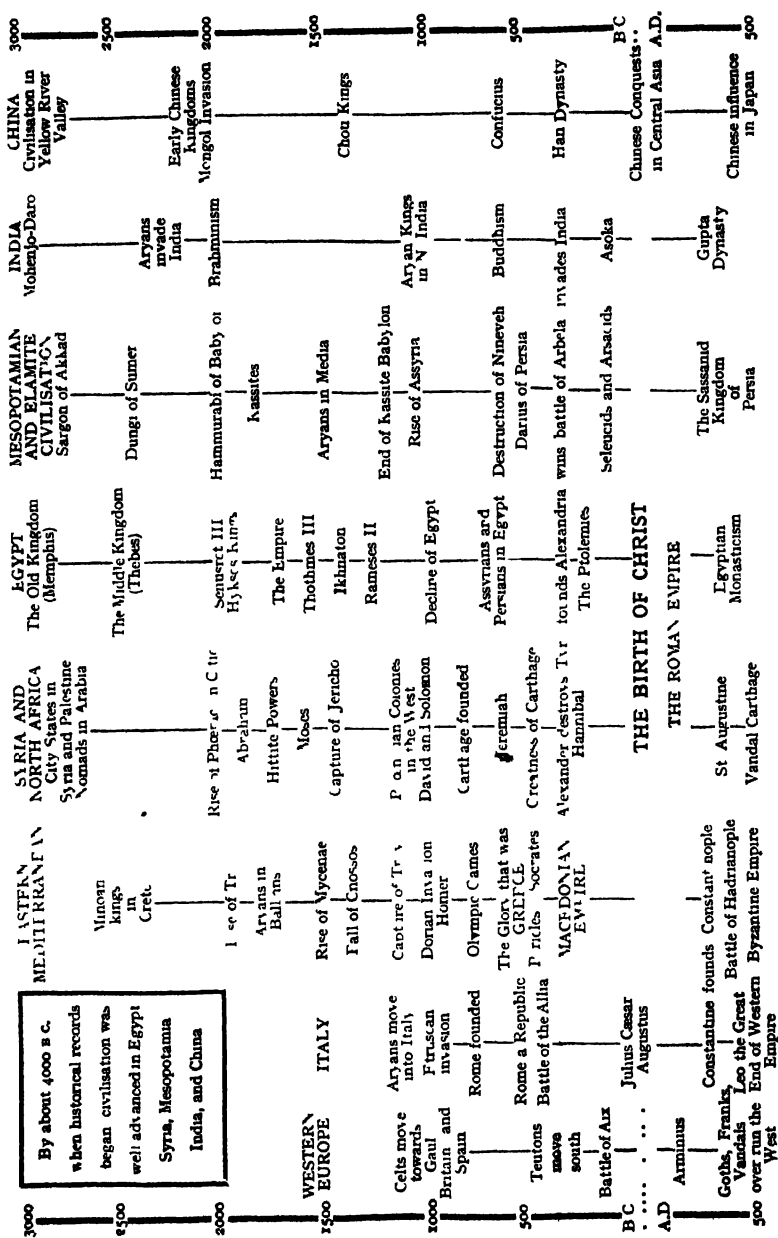
With the Renaissance there was a return to the humanistic view of H. based on that of the aucts. Again it became a function of the historian to study and interpret human actions and human thought. H. after the Græco-Rom. model again became concerned with material values and with instruction in the art of politics and practical life. Machiavelli set himself to understand human actions, to study political history, and to explain to the Its. why things had happened as they did. From Italy the new approach to learning spread to other countries. It. historians, often at the invitation of the rulers of the new nationalist states—states which were in part the result of the revival of the later Rom. conception of sovereignty (absolute military monarchy or 'Caesarism'—Mommson)—introduced the new idea of H. to European courts. Polydore Vergil of Urbino was commissioned by Henry VII. to write the history of England, a task which was completed in 1533 and presented to Henry VIII. At the same time, the discovery of America and the formulation of the basic principles of experimental scientific method played a part in encouraging an interest in H. While less and less could be taken for granted in a world which had felt the impact of the new discoveries, the beginnings of science suggested new critical methods of approaching the past. Thus Wm. Camden in his work on the topography and archaeology of Britain reconstructed the past from data in much the same manner as the natural scientists of the time were using data as the basis of their scientific theories.

The reaction away from the medieval view of the nature and history of man was virtually complete in the eighteenth century.

Hume and Voltaire established the belief that human life had been in the main a matter of blind and irrational forces but

Tables on pages 154–155.

THE FIELD OF RECORDED HISTORY





EUROPE		ASIA		AMERICA	
500	Rise of the Papacy				
600	Rise of Byzantine Art				
700	Spread of Mohammedanism				
800	St. Boniface in Germany	Mohammed 570-632 632 The Hijra	12th Dynasty 118-907		End of First Mayan Empire
900	Charlemagne—Holy Roman Empire	THE CAROLINGIAN RENAISSANCE			
1000	Emperor Otto I				
1100	Viking Raids and Conquests	Rise of Seljukian Turks THE CRUSADES (1095-1291)	Northern Sung Dynasty 960-1250		Rise of Inca Empire of Peru
1200	Romanesque Architecture	Rise of Mohammedan Empire in India (1206)			
1300	Gothic Architecture	Invaders of Russia Mongol invasions of India (1206)			
1400	Rise of Universities	Mongol invasions of Europe Mongol invasions of Russia			
1500	Age of Maritime Discovery	1453 Capture of Constantinople 1492 Columbus's discovery of America (1492)			
1600	Rise of Capitalism	Portuguese, Dutch, and British East India Companies The French Revolution			
1700	Age of Louis XIV. The Growth of Science The Enlightenment	Decline of Turkish Empire Indian Mutiny Russia in Central Asia			
1800	Rise of Nationalism—Liberalism—Democracy—Socialism—Imperialism	1853 Japanese invasion of Korea 1854 The Meiji Restoration 1868 The Meiji Restoration 1868 The Meiji Restoration			
1900	THE FIRST WORLD WAR (1914-18) THE SECOND WORLD WAR (1939-45)	1911 Chinese Revolution 1911 Japanese invasion of Manchuria 1911 Chinese Revolution 1911 Chinese Revolution			

yet was capable of being converted into something rational. To them the Middle Ages were a period of barbarism. They consequently had little interest in any but the modern period and for this reason did little to improve the methods of historical research. Hume's *History of England* is slight and sketchy in its account of any period earlier than the Tudors, and Voltaire expressed the view that there was no reliable historical knowledge of events earlier than the sixteenth century. To Gibbon also the motive force of H. lay in human irrationality, and in *The Decline and Fall of the Roman Empire* he wrote the story of what he himself described as the triumph of religion and barbarism. In the latter half of the eighteenth century, however, greater emphasis was laid upon the idea that mankind was capable of a rational life, and a more scientific study was made of the advance of H. from barbarism towards reason and enlightenment. Turgot drew a distinction between natural phenomena, which remain the same for ever, and human society, where knowledge is acquired and experience transmitted. In this view the H. of mankind, despite periods of disturbance, is one of continual advancement. Condorcet also set out to show 'the successive changes in human society, the influence which each instant exerts on the succeeding instant, and thus in the successive modifications, the advance of the human species towards truth and happiness.'

The Fr. Revolution broke rudely upon the idea of progress. As a reaction from the excesses of the Revolution a new interest was taken in the Middle Ages; there was a sense of glamour in far-off times by contrast with the doubt and disturbance of the present. This historical interest was linked with the Romantic movement in literature in which it found its chief expression. It showed itself in historical scholarship, however, mainly in the work of the Ger. historians of the time, among them Mommsen, men who first directed their attention to the study of classical texts and auct. inscriptions but later extended their range to include the Middle Ages. In Germany the impulse to study medieval H. came from outside academic circles and was due in part to political motives: the medieval empire had been the archetype of Ger. unity and what Germany had once achieved she might, it was argued, achieve again. The critical methods of the Ger. historians in the examination and analysis of their sources and the solid basis of their scholarship had a great influence on the work of historians in other countries. In England up to the middle of the eighteenth century H. had been mainly regarded as a specialised branch of literature, and the greatest names of that time, for instance Macaulay and Carlyle, were those of men who were writers and men of affairs as much as they were historians. By the eighteen-seventies, however, Eng. historians were following the method adopted by the Gers. and were becoming increasingly scientific in their assessment of historical evidence. This tendency was furthered

by the growing importance of H. as a subject of univ. study, and the historical writers of the time were more akin to the professional or 'professorial' historians of the twentieth century than to their predecessors. Stubbs, for instance wrote for scholars and students, and Maitland's work on the history of law and institutions in England, despite the brilliance and lucidity of his style, is mainly a technical study which is not always easy for the layman to follow. At this period a number of societies were founded for the editing and pub. of auct. legal and historical documents. In 1887 Maitland founded the Selden Society for the pub. of auct. legal records and himself ed. sev. of its pubs. As the sources of H. came to be more and more explored and knowledge was amassed, research tended to concentrate on various detailed aspects with the background of which only the expert could be familiar. H. was in fact in danger of becoming a purely technical subject, and the wider function of the historian in interpreting the past to the present tended to be forgotten. Already, however, a note of revolt against the conception of H. as being concerned only with politics and constitutions had been sounded by Carlyle: 'the thing I want to see,' he wrote, 'is not Red-Book lists and Court Calendars and Parliamentary Registers, but the Life of Man in England: what men did, thought, suffered, enjoyed.'

The very title of John Richard Green's *Short History of the English People* is, again, indicative of a wider, more human approach to H. His work was the result of an awakening social conscience. Arnold Toynbee's *Lectures on the Industrial Revolution* reflect a similar impulse and were written under the influence of a new and wider conception of social justice. The influence of Karl Marx tended in the same direction. To Marx, H. was basically a story of the struggle between social classes created by the methods of production in use at any given time. In his view the economic structure of society is the real basis on which rested the legal and political superstructure. Relatively few historians have accepted the Marxian thesis that economic history is the clue to all H., but the influence of Marx stimulated an interest in the economic and social approach to H.

In recent years historians, while shedding nothing of the tradition of sound scholarship and careful research inherited from the later nineteenth century, have combined these qualities with a determination to examine the wider aspects of H. Among many modern scholars, Prof. G. M. Trevelyan may be quoted as one who holds the view that H. is both a science and an art, that while the discovery of historical facts should be scientific in method the exposition of them for the reader should partake of the nature of art, 'the art of written words, commonly called literature.' Trevelyan too is among those who have embodied their learning in general works of interest to the non-specialist reader as well as to the specialist. H. becomes an aid in the philosophical

interpretation of human life, and in this connection mention must be made of the great comparative study of civilisations which has been undertaken by Prof. Arnold Toynbee in his *Study of History*.

See B. Croce, *The Theory and History of Historiography* (Eng. trans.), 1921; J. W. Bury, *Ancient Greek Historians*, 1929; V. G. Childe, *Man makes Himself*, 1938 and *History*, 1947; A. Toynbee, *A Study of History*, 1936; E. H. Kellie, *Aspects of History*, 1938; J. W. Thompson, *A History of Historical Writing*, 1912; G. M. Trevelyan, *History and the Reader*, 1945; R. G. Collingwood, *The Idea of History*, 1946; K. B. Smellie, *Why we read History*, 1947.

Hit (anc. Is), tn. of Iraq, on the r. b. of the Euphrates, 100 m. W.N.W. of Bagdad. Camel posts start from here for Damascus, and the Euphrates is navigable up to this point. There are famous anc. bitumen and naphtha pits. Pop. 5000.

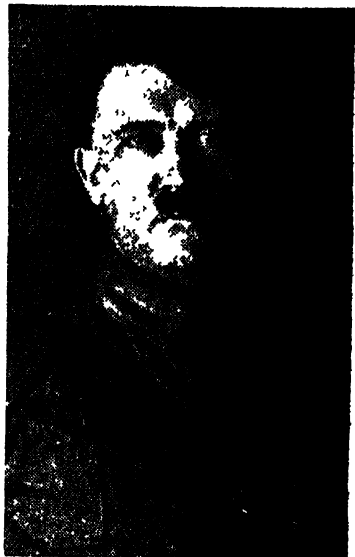
Hitchcock, Edward (1793-1864), Amer. geologist, began life as a congregationalist minister in Conway, Massachusetts, but in 1825 accepted the chair of chemistry in Amherst College—a post which had been offered him largely because of his *Geology of the Connecticut Valley* (1824). In 1841 he pub. the third and final report of his indefatigable researches into the geology and mineralog. of Massachusetts. In 1844 he became president of his old college where he taught natural theology, besides his chosen science. An assiduous contributor to scientific journals, H. strove to popularise his subject, and also pub. in 1851 *The Religion of Geology*.

Hitchendon, see HUGHENDEN.

Hitchin, mkt. tn. of Hertfordshire, England, on the R. Hiz, 32 m. N.N.W. of London. The chief trade is in corn, malt, and flour, while lavender and peppermint are grown and their oils distilled. Girton College (Cambridge) was originally estab. here; St. Mary's church is the biggest church in Hertfordshire. It stands on a Norman foundation and has in its fabric Rom. bricks, a massive buttressed tower, and a thirteenth century doorway. H. has associations with famous men. Here at Church House, once a school, Eugene Aram was a master. George Chapman dramatist, poet, and translator of Homer was born at Tilchouse Street. In the Baptist Church in the same street is a chair John Bunyan gave the minister in his day. Sir Henry Hawkins (late Lord Brampton), who as a criminal judge has had few equals, was born at The Grange in 1817. Sir Henry Bessemer, inventor of the steel process which bears his name, was born in 1813 at Charlton nearby. Pop. 14,000. See H. Hine, *The History of Hitchin*, 1927-29, and *Hitchin Worthies*, 1932.

Hitler, Adolf (1889-1945), Ger. dictator, b. at Braunau-am-Inn, Austria, his parents being of Bavarian and, perhaps, Bohemian, peasant origin. His father was a Customs officer in the Austrian service, who till late in life was known as Schickelgruber (Austrian peasants have two names, a

*Hausname* and a *Schreibname* and the change from one to the other is evidence of the sale or cession of property rights to a new owner) and who married three times, Adolf being the only son of his third wife. Adolf went to the best school available and was intended for the civil service, but the boy was interested only in drawing and architecture. His father dying, however, in 1902, left no resources for Adolf's continued education, and for some years he lived a life of hardship.



ADOLF HITLER

E.N.A.

With his mother he went to Vienna hoping to become an architect, but had to earn his living as assistant to a house-painter and by selling indifferent sketches. After a few years' miserable existence in Vienna he left in 1912 to settle in Munich. These years of penury and even mendicancy were formative of both his philosophy of life and of his character. Vague Nordic epics mingled in his mind with ideas of the 'elevating' influence of war and with less national dreams of Ger. national unity; and in the attempt, later, to realise these dreams he proved himself the successor of Bismarck. He completed Bismarck's work because, having himself a singularly forceful and sensitive personality, he was exposed to and responded to all the influences that were moulding Germany's character and destinies in the first three decades of this century. In the period of his extreme obscurity between

1904-12 he imbibed the pan-Germanism of Georg von Schoenerer, who indeed inspired H.'s strange views in *Mein Kampf*, and he studied the tenets of Karl Marx and Engels only to reject them. Even thus early he conceived a violent antipathy to the Slav influence in the Dual Monarchy and an equally violent anti-Semitism.

When the First World War opened he first volunteered for service with the Austrian forces but was rejected for physical unfitness. He then joined a Bavarian reserve regiment. He fought in the trenches, acted as despatch rider, reached the rank of *gefreiter* or lance-corporal, won the Iron Cross, was wounded in the Somme Battle, 1916, and was badly gassed in 1918. He lay blinded and helpless in hospital through the months of the revolution and the Armistice. It would have needed a man of much greater equipoise not to be carried away by the legend of Germany's 'stab in the back,' and he convinced himself that Germany had been defeated through the treacherous and enfeebling influence of the Marxist socialists. Back in Bavaria while attending and, later, conducting, courses designed to keep ex-servicemen away from Bolshevism, he came under the influence of Gottfried Feder, the intellectual father of the Nazi movement. It was at this time that he began his political career. He became the seventh member of an insignificant political group in Munich, the 'German Workers' Party,' and, equipped with a few definite ideas and a clear insight into the value of the arts of propaganda, he soon distinguished himself by his gift of popular oratory. Through his friends, Capt. Roehm, a staff officer of Munich, and Gen. von Epp, he maintained close contacts with the *Reichswehr*, which were to stand him in good stead. In 1921 he ousted Drexler, the founder, and himself became leader of the party, which now styled itself the 'National Socialist German Workers' Party,' its programme being H.'s nationalist and anti-Marxist creed. Differing from Roehm as to the function of the newly-created *Sturm Abteilung* troops ('Brownshirts') H. organised a special detachment to be his own political executive. This was the origin of the *Schutz Staffel* (S.S.) or Blackshirts formally established in 1926 in imitation of Mussolini's organization. Through Roehm H. secured the tacit approval of the local high command, together with financial resources. Thus encouraged he made his first attempt, in alliance with Roehm, Ludendorff and Goering, to seize power, in the notorious *putsch* in Munich of Nov. 9, 1923, the intention being to make Ludendorff Dictator. Two days later he was arrested and with others, including Ludendorff, tried for treason. The *Reichswehr* intervened behind the scenes to stifle the military connection with the reactionaries, but H. was sentenced to five years' imprisonment and incarcerated in the fortress of Landsberg im Lech. Here he worked on the final draft of *Mein Kampf* (q.v.) with the aid of his friend Rudolf Hess. No-one can understand H.

who has not read this strange rambling one-thousand page autobiography, philosophy and programme, with its prolixity and bombast, its candour, its peasant shrewdness, its fanaticism. Meanwhile his party disintegrated. Released under an amnesty in 1925 he set to work immediately to rebuild the party organization, though for some time Strasser, creator of the Nazi party in N. Germany, was more influential than H. in the party ranks, whose strength in the Reichstag was only twelve. H., however, gradually recovered the ground he had lost since the abortive *putsch*. By 1930 he was the undisputed head of a considerable party. Funds were increasingly flowing in from the big industrialists, who saw in National Socialism (q.v.) their best safeguard against Communism. 'Nationalism' gradually superseded 'Socialism' in the party programme, though its language was still wildly revolutionary.

When the world economic crisis came in 1930 H.'s party exploited the disillusioned and discontented masses as well indeed as the more solid elements, who saw their standard of living threatened by the crisis. And in the next election, after Brüning (q.v.) had dissolved the recalcitrant Reichstag, H.'s party won 107 seats. Shortly after this he stood against von Hindenburg in the presidential election and in the first ballot he barely succeeded in preventing von Hindenburg from securing the necessary absolute majority. Beaten in the second ballot H. was, nevertheless, now a political power to be reckoned with. In a rapidly deteriorating political situation Chancellor Brüning felt compelled to govern by decree and, though liberal in outlook, his regime paved the way to dictatorship. But in May 1932, he fell, after securing the re-election of von Hindenburg as president and dissolving H.'s Brown Army. But though H. regarded himself as heir to the chancellorship, he was now balked by the covert resistance of the old right wing regime, with its backing of industrialists and Junkers. When von Papen became Chancellor, H. remained aloof. Von Papen dissolved the Reichstag but the Nazi party doubled its strength and they and the Communists seemed to be sweeping the country. H. was now at the head of the biggest single party. When, however, von Hindenburg intimated that he would not tolerate H. as Chancellor, though he would admit national socialists in a coalition gov., the Nazis launched a violent campaign of opposition inside and outside parliament. Von Papen took up the challenge and again dissolved the Reichstag and stopped many of H.'s financial sources. In the next election the Nazis lost a million votes. Then, however, having been superseded by Schleicher, who was also manoeuvring for the support of the moderate national socialists led by Strasser, von Papen veered round, released the subsidies from the industrialists to H.'s coffers, and induced von Hindenburg to accept H. as Chancellor of a gov. in which there would be only three National Socialists.

Thus in January, 1933, began the period of the Third Reich. By the end of that year the one-man Party had become the one-Party State. In the elections it was only by the support of the other Right parties that the Nazis had won a majority vote. Terrorism and brutality, however, estab. H. in an unassailable position. Opponents disappeared by assassination or into concentration camps (see BUCHHEWALD). The conservatives were shouldered aside, though H. was astute enough not to offend any powerful interest. When some of his followers, wearied of Socialist- and Jew-baiting, murmured against the dropping of the 'Socialist' and Radical elements of the Party programme, H. suddenly struck down any and all of the leaders, Nazis or reactionaries, likely to give trouble, the chief victims being Strasser, Roehm, and Schleicher and his wife. This was the infamous 'purge' of June 30, 1934, in which a hundred National Socialists were murdered. All power now passed to the National Socialist executive, which, for all practical purposes, meant H. himself. The true reason for this purge may never be precisely known, but it is generally believed that Roehm aimed at getting the Reichswehr embodied in his *Sturm Abteilung* organization, which H. of course resisted. Soon afterwards Hindenburg died and H. was declared his successor; but he abjured the title of Reichspräsident in favour of Fuehrer and Kanzler. Thus the mendicant adventurer of Munich now became the master of Germany.

Sure of his position in Germany by ruthless terrorism, H. now began his long campaign to restore Ger. power in Europe, heralding his advent to power by a series of increasingly grave breaches of treaty obligations and by flouting European opinion. The first need was to rearm Germany which was done secretly at first and then ever more flagrantly. But before launching his attack on the Versailles Treaty he awaited the plebiscite on the Saar in Jan 1935. The result, partly influenced by terrorism, was an overwhelming majority for retrocession to Germany. In March he denounced the military clauses of the Treaty and introduced conscription for the Reichswehr. A year later he boldly risked marching his forces into the demilitarised Rhineland zone, at the same time denouncing the treaty of Locarno (*q.v.*), which, he claimed, had been abrogated by the Franco-Soviet Alliance. This, coupled with conscription, transformed the military situation, for at one blow it deprived the W. Powers their strongest weapon, freedom of entry into Germany. Thenceforward H. could hope to resist an attack on his W. front with one arm while the other was free to threaten the E. In July, when the civil war in Spain broke out, H. seized the opportunity to test his army and air force on the side of Franco. And once again the democracies held off and weakened, while Germany waxed in strength and H. in defiant confidence, conformably with doctrines contemptuously expounded in *Mein Kampf*. H. now pursued his tech-

nique of deliberately lying so as to lull future victims into a sense of false security while hatching his aggressive schemes. Yet in all candour he himself had avowed that the bigger the lie the better the chance of its being believed. The remilitarisation of the Rhineland was followed by two years of the most active Ger. military preparations coupled with an economic reorientation aiming at autarky. Events abroad in 1936-37, such as the League's ignominious failure to check Mussolini's Abyssinian adventure, increased the nervous tension in Europe, and went far to strengthen H.'s position. Mussolini was drawn into the orbit of H.'s machinations and intrigues, and their collaboration found expression, in Sept. 1937, in the Rome-Berlin Axis (see AXIS) a diplomatic coup whereby H. gained an ally at the expense of the Powers of the Versailles *Diktat* whose moral influence had well nigh vanished in a welter of appeasement.

The end of 1937 saw Germany's course set for an expansionist foreign policy which for two years won spectacular successes. Austria was seized without a fight, a country which even Bismarck had shrunk from touching. H. had acquired Austria by the simple process of manipulating an abrupt crisis in Austro-Ger. relations and then sending the Ger. army across the frontier and forcibly incorporating Austria in the Reich. Mussolini despite his apprehensions was too cowed to make a counteracting move. But the great test of this policy came with the campaign for the liberation of the Sudetenland; for this was an attack on a sovereign State bound by Treaty with the W. Powers and by ethnic ties with Russia (see further under CZECHOSLOVAKIA). But H. had gauged to a nicety the underlying realities of the immediate political situation. Enough for him that the cove. in the W. were not then prepared to fight. Then followed the humiliating pact of Munich (*q.v.*) and H. now seemed in the eyes of the average Ger., not only to be the preserver of peace but a consummate statesman, outtravelling all his predecessors in extending the Reich frontiers. No doubt each successive seizure enhanced the feeling of resentment in the W. as much as it enhanced H.'s prestige in the Reich. Yet his occupation of Prague was his first bad blunder owing to its effect on Brit. foreign policy and on Mr. Chamberlain. It in fact led to the Brit. guarantee to Poland and all that that was to imply in the ensuing seven years. A general European war was in fact only narrowly averted during the Sudetenland crisis. At the Nazi Party rally at Nuremberg H. appeared as the avowed champion of the Sudetic Gers. With the Reichswehr mobilised and his W. front fortified by the Siegfried Line, confronted by potential adversaries who were all militarily unprepared and divided geographically and ideologically from each other, H. was then in a position to dictate terms. Thus within less than a year he had added ten million Gers. to the Third Reich, broken the one formidable bastion to Ger.

expansion S.-E. and made himself the most powerful dictator in Europe since Napoleon I. In the talks with Mr. Chamberlain at Berchtesgaden and Godesberg he had reiterated his stock phrase used after the rape of Austria—that he had no more territorial claims to make. Yet soon afterwards he was invading and overrunning, not merely the Ger. inhabited regions of Bohemia, but the whole of Czechoslovakia, and then himself went to Prague to proclaim yet another bloodless victory, while at the same time he announced his annexation of Memel in violation of the Versailles Treaty.

Poland was the next victim marked out for H.'s hatred and aggression. He was now claiming the retrocession of Danzig and demanding the Polish corridor (*q.r.*) and, in response to Poland's appeal, Britain and France at once guaranteed Polish independence. H. was shaken by this development, more particularly when the two W. Powers began negotiations with Moscow. For if he now precipitated war it would be to rouse the haunting spectre of a war on two fronts. But rather than abandon his cherished designs on Danzig and the corridor he preferred to swallow all that he had previously said in condemnation of the Bolshevik regime and proposed the non-aggression pact with Russia to which Stalin agreed on August 23. With the removal of any probability of Soviet assistance to the W. Powers the way was clear for H.'s *blitzkrieg* on Poland. He went himself to superintend the slaughter and strutted among the ruins of Warsaw, which were festooned for the occasion.

The first weeks of the Second World War, involving the callous conquest of Poland, illustrated H.'s cynical fiction of a defensive war against 'encirclement' or, in his own phrase, a state of neither war nor peace, a convenient fiction which left him with the initiative both on the battlefield and in the sphere of diplomacy. Had they but taken literally the crude assumptions in *Mein Kampf* his enemies would sooner have understood the full implications of his methods, his policy of attack from within or of corrupting a nation from within and of repeating the process with one nation after another, while his opponents continued to rely on the false security of an outmoded diplomacy. After the immolation of Poland, H., speaking in the Reichstag on Oct. 6, in a remarkable rhetorical outburst, made his 'last offer' to the Allies. But as a plea for peace it suffered from the now universal realization that his word could in no circumstances be trusted. A month later he spoke at Munich in the Bürgerbräu beer cellar on the anniversary of the 1923 *putsch*, announcing that he had ordered Goering to prepare for a five years' war. He left the beer cellar somewhat abruptly and soon afterwards there was an explosion in which a number of persons were killed. Though it was averred by Ger. propagandists that the attempt was engineered by foreign agents, it was generally believed that H. had departed early in the knowledge that it would occur.

In his New Year address in 1940 he declared that he was fighting for a 'New Order' (*q.r.*) in Europe, and in March he met Mussolini on the Brenner, a prelude to the invasion of Norway and Denmark and the overrunning of the Low Countries and France.

The disastrous events of spring and summer, 1940, culminating in the disgraceful armistice with Pétain (*q.v.*) only confirmed the average Ger. belief in H.'s genius. Following these conquests the natural littleness of H. revealingly asserted itself in the resurrection of the armistice coach of Compiègne of 1918 for the armistice of 1940. But although the *Hitlerkrieg* had won remarkable successes it had failed, owing to the obtuseness of the incomprehensible Brit., to bring victory. After the Battle of Britain (*q.r.*) had been in progress for some time H. began to realise that Britain could not be conquered from the air and, having met Mussolini at the Brenner and again in Florence to concert further measures against her, he also met Franco in Spain, probably with the object of inducing him to co-operate in the blockade of Britain. H.'s thoughts, indeed, turned increasingly on U-boat warfare. In his New Year's proclamation to the Reichswehr in 1941, he promised victory over Britain that year and the destruction of every nation which 'ate of democracy.' He continued to repose confidence in submarine warfare and sought to fix on Mr. Churchill's shoulders the responsibility for unrestricted or indiscriminate bombing. In the spring of 1941 he attacked Yugoslavia and Greece and went to join his advancing armies there, while continuing to belabour Britain with his bombers and striking under water at her seaborne supplies. H. knew that only successful invasion could bring Britain to her knees. But both H. and his military experts feared to make the effort, and as an alternative H. in 1941 planned to attack the empire at its Achilles-heel in the Middle E. This plan, however, depended for its success on the neutrality of Russia and, not being sure of this, H. and his advisers decided to combine the attack on Egypt with an invasion of Russia itself. Just previously (June 3, 1941) he again met Mussolini at the Brenner, ostensibly to set in motion a European peace. Three weeks later he doffed the mask and, breathing anathema on the Soviet gov. as the 'Jewish-Bolshevik clique', launched his legions against the hated Slavs of Russia—a piece of bluff and treachery which he had revolved for many years, having in fact imparted his scheme to Dr. Rauschning in 1934. This fatal decision revealed the essential weakness underlying all H.'s *weltpolitik*, and it is probable that he took it against the opposition of other Nazi leaders and against the advice of many members of the Ger. General Staff. But in June 1941 he had taken the plunge for good or ill. Thenceforward he strove to divide Russia from the W. Allies by harping eternally on Germany's anti-Bolshevik crusade (see also ANTI-COMINTERN PACT) and even

sent Hess to England on the amazing mission of winning over Britain to a crusade which, had it by any conceivable mischance succeeded, would have out-Muniched Munich. It is, of course, possible that Hess flew over on his own initiative, but this is improbable except on the extreme supposition that Hess, alone of the leading Nazis, was utterly opposed to the Russian venture and hoped somehow, to thwart it through British action.

The Ger. campaigns in the Balkans and the Mediterranean were brilliant in conception and execution but Brit. intervention in Greece and Brit. resistance in Crete and Lihvia delayed H.'s time-table, probably fatally, and, as the summer of 1941 wore on it was becoming obvious that Ger. optimism had outrun itself. For some time H. was silent, but on Oct. 4, at a meeting of the Winter Help Campaign, he announced a 'gigantic operation' which would bring about the defeat of Russia. Then a few days later, he boasted that he had smashed her. The final desperate assault on the Caucasus failed disastrously, and at last the voice of the critics in Germany was heard. But, as always in these military crises, it was unknown whether H. had imposed his will on the Ger. General Staff or whether the generals, appreciating the disastrous effects of the retreat in Russia on Ger. military and civilian morale, asserted themselves against H. But on Dec. 21 following the ominous failure of the Reichswehr before Moscow, H. abruptly announced the dismissal of the commander-in-chief, Brauchitsch, and his own assumption of direct control of all military operations. Against further disaster he staked the legend of his own intuitive talent—a decision no doubt hastened by the entry of the United States into the war and the fact that four-fifths of the world was now ranged against Germany. For the circumstances of the Amer. intervention disposed of the last chance of a compromise peace even if the generals overthrew H. and sought peace as a military dictatorship. Whence the very natural desire of the generals to escape responsibility for the ultimate collapse which they knew they were powerless to avert.

H.'s New Year message for 1942 showed a marked decline in buoyancy. 'Let us all,' he said, 'pray to God that the year will bring a decision—a strange invocation in the light of the Nazi creed.' But there were rumours of disaffection among the Ger. generals and among the radicals in the Party, and H. then appointed Bormann to secure co-operation between the Party and the State. At this time he was making the greatest efforts to strengthen the home front and to augment the vast numbers of foreign slave-workers driven into Germany to supply the Reichswehr for the spring offensive. The Ger. armies had not yet shot their bolt, and, with the Allies still far from their total war-effort, H. could hope for further success in the field and, in fact, in the earlier half of

1942, the Ger. armies in Russia reached the Volga at Stalingrad while Rommel (q.v.) in N. Africa was threatening Cairo and Alexandria. Yet before the autumn was past Rommel had been routed at El Alamein and the Russians had destroyed von Paulus's Sixth Army before Stalingrad. H.'s repulse in his second thrust into the Caucasus was decisive, especially as his armies had penetrated deeply before being hurled back by a mighty Russian reaction. But the Ger. disaster of Stalingrad was even more reverberating. For, not long before, H. had exulted over the expansion of Ger. *lebensraum* at the expense of other European nations, and, on Oct. 1 at the Sportpalast, with characteristic vainglory, he had promised the capture of Stalingrad. His strenuous attempts to make good his pledge cost Germany tremendous losses in life and material in a defeat which will loom large in the chronicles of war for all time. From that time H. spoke less of Ger. victory than of the inability of the Allies to defeat Germany and in his New Year Order of the Day for 1943 his tone indicated a more chastened Fuehrer. For Germany's industrial potential was now being severely damaged by air attack, and the Soviet armies were pressing ever more massively on the E. Front. On Feb. 25, instead of speaking, H. issued another proclamation, this time to celebrate the anniversary of the Nazi Party's foundation. His silence set rumour abroad and a month later he felt bound to break his long reticence. His address, however, was a lifeless reiteration of raw clichés uttered in a perfunctory hurried mumble.

But new crises soon faced him. In July 1943 his brother dictator, Mussolini, fell from power a few days after he had met H. to demand more help in the defence of Italy. H. tried to palliate the capitulation of Italy, which soon followed, by stressing Italian sabotage and weakness of will to fight and by claiming that he had for some time foreseen this result. Two months later, in Munich, at a party gathering he seemed to regain something of his old confidence. In emphatic tones he declared that the hour of retaliation had come and that everything was possible in the war but that he should lose his nerve. He assured his audience that however long the war might last Germany would never capitulate. 'Even at the eleventh hour,' he declared, 'Germany would not surrender; she would go on fighting past twelve o'clock.' At the beginning of his twelfth year of power, on Jan. 30, 1944, he spoke of the Russian menace saying: 'There will be only one victor in this war, and that will be either Germany or Soviet Russia.' After the Ger. armies had been driven out of Russia in a series of sweeping counter-offensives, and after the Anglo-Amer. landing in Normandy, where it soon became clear that the W. Allies would not, as H. had promised, be 'driven into the sea,' the last remnants of a Ger. 'opposition,' led by certain generals of the Reichswehr, supported by industrialists, Liberals, and even elements of the Left, attempted a

*coup d'état* which had obviously been long prepared. The signal was to be the assassination of H., but the bomb which was placed in his headquarters by a staff officer named von Stauffenberg failed in its purpose. H.'s staff were all killed or wounded. H. is said to have sustained injury to an eardrum besides possibly other injuries. The fact that he had escaped death was not known to the conspirators, who proceeded to execute their plan, but with disastrous results to themselves, for they were quickly rounded up and executed after trial before a 'People's Court.' The revolt, however, had shaken the Nazi regime to its core. On the night of July 20 H. broadcast an appeal for loyalty and discipline. When the immediate danger was past, the badly-frightened Fuehrer instituted his last and most savage 'purge,' thousands of men and women being shot, not because they were implicated, but because they might conceivably have led another rising. At the same time Himmler (*q.v.*) took command of the army inside Germany so as to tighten the Nazi grip on it. Thenceforward the Ger. people had no alternative but to follow H. to perdition. After his microphone appeal of July 20 he again relapsed into silence and obscurity. It is not improbable that he had been more seriously affected by the bomb explosion than was revealed and that Himmler had in practice assumed the gov. of the country. This seemed to be confirmed by the proclamation on the formation of the *Volks-sturm*: but H. continued to issue some proclamations and once again, on Jan. 1, 1945, he spoke on the wireless, from E. Prussia. But as the Allies pressed into Germany from all sides H. succumbed to the pressure of great events. Obscurity shrouds his final hours. It was rumoured that he would retire with the S.S. and Nazi fanatics to some last redoubt in Bavaria and then that he had changed his mind and resolved to remain in Berlin, perhaps with the idea of creating a legend by an heroic death on the barriers as those were stormed by the triumphant forces of Marshals Zhukov and Konlev. But as events proved he had no need to seek death, for death in any case was already at hand.

H. achieved the triumph of the Nazi party in Germany by a mixture of deceit and violence, and used the same devices to destroy other nations. From the time he became master of Germany he made lies, cruelty and terror his prin. means to accomplish his purpose; and he became in the eyes of virtually the whole world, an incarnation of absolute evil. The neurotic, who made himself leader of the Ger. race, inflamed it with his ambitions. His monument is the devastation he wrought, his dirge the grieving of nations at the miseries he heaped on them. None of those who in past centuries have sought to conquer Europe set his traps with the same cold deliberation, invigiled his prey towards them so cunningly and, when it was in the toils, struck with such ferocious and concentrated fury. None had his scorn of peoples weaker than his own nor

his ingenuity in torturing them when once within his power. His portentous power came from a combination in a single being of a soul obsessed by injured pride and hatred, a mind able to devise the means of gratifying them, and the tenacity of a remorseless purpose. His immediate aim when he entered politics was the redemption of the Ger. people from the humiliation and consequences of defeat; but even then he was looking far ahead of this goal, to a *Herrenvolk* to be. The Nordic theories of Gobineau and Lapouge equipped him with a philosophy which demanded belots for its fulfilment, and he found these among the Jews, Slavs and marxists whom he bent to his purposes with an impassioned hatred. He found in the divided and tortured state of mind of the Ger. people the symbol and expression of his own morbid emotions and inferiority complex. He made it his life-work to identify himself with the Ger. people and, by inflaming their animosities and ambitions, to find an outlet for his own. From an intuitive understanding of the Ger. mind and psychology he elaborated theory and practice of propaganda which, because it worked on people with obsessions similar to his own, achieved startling success; and later, with Goebbels (*q.v.*) he developed it into a new and fearful instrument of tyranny. His resourcefulness was extraordinary, and in the art of suiting policy to necessity he had no equal. If he had cunning and ruthless coadjutors in Goering, Himmler, Goebbels and others at his side, it was H. who had appointed them and shaped their course; it was his name which rallied Germany and his character which informed every development of Nazi policy. It has been well said that if his life and statecraft be seen in true perspective it becomes plain that, though he would gladly have kept England and, later, the United States, out of the war, he was ready to risk doing a world in arms if by that means alone he could estab. the Germany of his ambition.

It is difficult in these years to achieve full objectivity in the assessment of H.'s record in mankind's story. Evil genius of Germany and indeed of mankind, he was yet also, or so hist. may decide, the one political leader of genius Germany has produced since Bismarck. One thing is certain: like Napoleon he changed the world even if he could not conquer it, and the tragedy of the war he unleashed upon all the nations induced the profoundest questionings of the moral basis of most existing political and social institutions. His tragedy and that of Germany was that his later madness undid all that had been achieved for his country in the years before moral and perhaps mental corruption set in.

H. was a little, slim, dark man, most un-Nordic in appearance, with his sensitive nose and fanatical eye. He was unimpressive to meet on informal occasions, but seemed to become transformed in front of an organised crowd of his followers, speaking to them like a man possessed by an all-consuming passion. His speeches



revealed no truly original ideas. In them he relied largely on the emotional impact wrought on his followers by constant iteration of past hist. and deep-seated prejudices common to many Gers.; and it may truly be said that his remarkably keen and subtle comprehension of the mind of the Ger. people was at once the mainspring and the ultimate source of his power for evil. His whole life illustrates the force of Plato's aphorism: "Those who have no natural aptitude for justice and other noble ideals, and no affinity with them, will never learn the full truth about good and evil, however good their intelligence and memory may be in other fields."

See F. Schuman, *Hitler and the Nazi Dictatorship*, 1936; K. Heiden, *Hitler's Biography*, 1936; J. Turner, *Hitler and the Empire*, 1937; E. Lips, *What Hitler did to Us*, 1938; H. Rausching, *Hitler Speaks*, 1939, *Hitler's Arms in War and Peace*, 1940, *Hitler wants the World*, 1941; E. John, *Answer to Hitler*, 1939; Adolf Hitler, *Hitler Speaks*, 1939; L. Golding, *Hitler through the Ages*, 1939; R. C. Ensor, *Hitler's Self-disclosure in 'Mein Kampf'*, 1939; H. Hauser, *Hitler versus Germany*, 1940; R. Baxter, *Hitler's darkest secret*, 1941; E. Vermoill, *Hitler et le Christianisme*, 1944; H. T. Roper, *The Last Days of Hitler*, 1947; H. Moore and J. Barrett (ed.), *Who killed Hitler?* 1947; Liddell Hart, *The Other Side of Hitler*, 1947; T. von Schlabrendorff, *Revolt against Hitler*, 1948; F. Meinecke, *Die deutsche Katastrophe*, 1947.

Hitopadesa, or 'Friendly Instruction,' free adaptation of the *Fables of Bidpai* (or *Pilpay*), which was itself a collection of old Hindu stories, derived eventually from the *Pancha Tantra*, or the legends and apologies of the Brahma Vishnu Sarnan (second century B.C.). Though the *Fables of Bidpai* were trans. in the sixth century A.D. into Pahlavi (anc. Persian), and afterwards into Arabic, Gk., Lat., and so into the tongues of modern Europe, they are best known to W. peoples by their modernised version, the H. This latter anthology, of which there are at least three Eng. trans., contains a number of loosely-interwoven animal tales, etc., which are strewn with moral apothegms and quaintly recounted after the manner of Aesop or La Fontaine.

Hittite Language, see under INDO-EUROPEAN LANGUAGES.

Hittites, anc. people, or group of peoples, whose origin is still a matter of dispute. The Biblical names Heth and Hittite indicate a people practically unknown until recent exploration, after 1870, brought to light a number of distinctive monuments. In 1880 Prof Sayce announced the discovery of a forgotten Hittite Empire once flourishing in Asia Minor. Their settlements and rule extended at various periods from Armenia to W. Asia Minor, and as far S. as Palestine. It is possible that they were the White Syrians, or Syro-Cappadocians, known to Herodotus. Many monuments and tablets have been discovered in different parts of Asia Minor, particularly on

the site of one anc. city, now known as Boghaz Keui, formerly Pteria, the anc. cap. of Cappadocia, which appears to have been occupied by the H. at a very early date. Pteria lies E. of the Halys, from which point roads radiated to harbours on the Aegean, to Northern Syria, and the plain of Cilicia. In the O.T. they are spoken of in Gen. xliii. 10 as the children of Heth, dwelling in Kiritharba (Hebron). In this reference Abraham appears dwelling among them as a stranger and wishing to purchase a place to bury his dead wife in. This he accomplished through Ephron the H., who sold him the cave and the fields of Machpelag. In the book of Ezekiel (xvi. 3), Jerusalem is described thus: 'The Amorite was thy father, and thy mother was a Hittite'; there are sev. other general references in the O.T. and they are also mentioned as individuals, e.g. Uriah the H. One reference (1 Kings x. 28, 29) mentions the kings of the H. buying horses and chariots from Egypt. This is interesting, because until the coming of the Hyksos to Egypt, the horse appears practically unknown or little used, and the H. people came from a country where horses had probably been bred and used for a considerable time. To the Egyptians the H. were known as the Kheta, and they appear to have borne them an extraordinary hate; there is a probability that the Hyksos who conquered the Egyptians were the same as the Kheta, but at present it cannot be proved, but so far the extreme difficulty of correct dates makes it impossible to do more than theorize. Thothmes I. led his triumphant armies over N. Syria, and took the tn. of Kadesh, or Qadesh, the stronghold of the Kheta; this was not long after the expulsion of the Hyksos from Egypt. Thothmes III. waged terrible war against the Kheta, who were by this time evidently strong enough to be regarded as serious foes. They rose in revolt against Egypt, and Thothmes III. marched over N. Syria and reduced the tribes who had banded together with the H. to utter submission. Kadesh and Carchemish on the Euphrates fell into the hands of Thothmes, who marched back to Egypt laden with plunder and captives: the king of Kadesh, however, escaped. In the reign of Amenhotep IV. (Akhnaton) the H. appear to have gathered great strength, and, throwing off the yoke of Egypt, began to press steadily down on to the frontiers of her empire, taking forcibly one by one the tns. of Syria. The Tel-el-Amarna letters contain reports from various governors in the Syrian dists., asking for help against the H. All of them implore help from 'their Lord the King' against the terrible H. They cried to deaf ears, for the king (Akhnaton) was busy in his sacred city, dreaming of universal peace and brotherhood, and the H. took for themselves all that the fierce Thothmes III. had won. Amenhotep IV. took no notice of the perilous position, and the Hittite king, Suppiluliuma, overran the country as far as the Tigris. Seti I. led two campaigns against the H., now spoken of in Egypt as 'the abominable

Kheta.' He appears to have won some victories over them, but by no means to have broken their strength, for his son Ramesses II. was unable to conquer them. The H. king, Mauthnuro, collected a vast army and prepared for a final struggle with Egypt for the possession of N. Syria. Ramesses II. marched N. with his army, and a great battle was fought in the fields of Kadesh which ended in the victory of neither. After this a treaty was arranged, and the two kings formed an alliance, which seems to have been very necessary,



THE DEFEAT OF THE HITTITES AT  
THE BATTLE OF KADESH

against some other unnamed enemy, probably Assyria, who appears at this time as a growing danger. Trouble was also threatening from the Mediterranean—'the islands were restless'—so these two great empires allied themselves for mutual protection. This is a very early example of an international agreement. Some years later this newly-formed friendship was cemented by Ramesses marrying a H. princess. In Assyrian references, the H. (whom they call Khatti) appear as a powerful people, occupying Carchemish on the Euphrates. Sargon III., in 717 B.C., left records of how he finally overthrew the Khatti of Carchemish, and captured their king, Pisiris.

From all these records, and from the discoveries of archaeologists, we gather a brief hist. of the H.

White Syrians, or Hatti, were found in Cappadocia, after the Cimmerians had destroyed Phrygia. Croesus, king of Lydia, defeated what remained of them. Boghaz Keui formerly Pteria, is the only H. city that has been really thoroughly examined at present. It was evidently a city of immense size. The acropolis was strongly fortified, and a wall 14 ft. thick

surrounded the whole city. Many inscriptions and sculptured reliefs were found, and a number of tablets in Babylonian and in the H. language, among them a cuneiform copy of the treaty with Ramesses II. Euyuk possesses remains of a large palace entered between sphinxes, on one of which is sculptured a relief of a double-headed eagle; this device is said, without definite proof, to have been adopted by the Seljuk Sultans of Konia, and to have been brought by the crusaders to Europe, where it was taken by the Ger. emperors as their arms. In various places, widely distributed, fragments of pottery, sculptured lions, reliefs, and buildings have been discovered; in some of the buildings columns rested on bases carved with winged lions.

The style of all their sculptures is quite individual and easily distinguished from the Assyrian and Babylonian art. The facial type is very markedly non-Semitic, the figures are usually depicted short and heavily built, with prominent bones, broad-shaped heads, receding foreheads, long noses, thick lips, and short chins. The hair of the men is frequently worn in a pig-tail. The dress usually represented consists of a long robe worn over a tunic, a high conical cap, and long boots turned up at the toes. The outer robe was bordered with a fringe. The females wore a long veil or shawl covering the head and forehead and falling to the feet: one relief pictures two H. women sitting together with this veil or mantle draped over a head-dress resembling a modern brimless top hat. Very little can be said with certainty of their social conditions; one thing is clear, that their women enjoyed the same high status and freedom as in Babylonia. They appear to have adopted the Babylonian cult of the goddess Istar (Ashtoreth); she is depicted in the sculptures of Boghaz Keui with a mural crown; the H. may have introduced her worship to Lydia where she became known as Cybele, 'the Great Mother of the Gods.' The bee was sacred to her, and a H. gem, found at Aleppo, represents her standing on a bee. Her priestesses who served her in Lydia are represented bearing a double axe, a symbol found frequently at Knossos in Crete. The Lydians, who were among the first to use coined money, employed the silver 'Mina' of Carchemish, i.e. a H. silver coin.

A new and possibly decisive step towards deciphering the Hittite hieroglyphs which, discovered in various parts of Anatolia and Syria, had baffled archaeologists and philologists for a century, was claimed in 1949 to have been taken by Prof. Bossert, head of the Institute of Research in Ancient Oriental Civilisation at Istanbul University, as the result of discoveries made during excavations (1947-49) at Karatepe, in the foothills of the Taurus Mts. near the Jeyhan Riv. Among the discoveries were two T-shaped gateways leading up to a hall, with two lateral recesses, giving access to the Karatepe fortress. One of the gateways led into another rectangular enclosure containing a colossal royal statue mounted

on a stone base with two bulls led by a female figure. Whole panels of the walls were covered with inscriptions, which were continued on the statue itself and on the sides of the bulls. It was found that the inscriptions on the walls were bilingual, those on the panels on the left of the entrance being in old Phœnician and those on the right in Hittite hieroglyphs. They are dated about 730 B.C. The hope that by comparing the two texts one might decipher the hieroglyphs was strengthened when Prof. Bossert found the phonetic rendering of the name of the city of Adana which figures in both texts. Since then he and other philologists have continued research work on the twin texts, and it is claimed that about one-third of the whole text of these hieroglyphic inscriptions has been deciphered. In the past some philologists had succeeded in reading the sense of some hieroglyphic ideograms, but no key had been found to the language represented by Hittite hieroglyphs, which was assumed to be a language of Indo-European origin. Prof. Bossert's discovery may provide the missing key to this part of the early hist. of Asia Minor. Hittite cuneiforms found earlier at Bogaz-Koy (Boghaz Keul; anct. Hattushah) dealt with a period between the fifteenth and twelfth centuries B.C., at which later date the cap. of the Hittite empire was destroyed by invaders. The hieroglyphs are believed to describe events of a later period until about the sixth century B.C. and their deciphering should yield information on historical and religious events and developments during the intervening six centuries. (*Times*, April 20, 1949.) Consult W. Wright, *Empire of the Hittites*, 1884; A. H. Sayce, *The Hittites*, 1890; L. Messerschmidt, *The Hittites* (trans. by J. Hutchison), 1903; D. G. Hogarth, *Asia and the East*, 1909, *Hittite Problems and the Excavations of Carchemish*, 1912, *Hittite Seals*, 1920, and *King of the Hittites*, 1926; J. Garstang, *Land of the Hittites*, 1910, and *The Hittite Empire*, 1929; A. E. Cowley, *The Hittites*, 1920, and *Date of the Hittite Hieroglyphic Inscriptions of Carchemish*, 1928; L. A. Mayer, *Index of Hittite Names*, 1923; J. R. Harris, *Further Traces of Hittite Migration*, 1927; G. A. Barton, *Hittite Manual for Beginners*, 1928; H. H. von der Osten, *Explorations in Hittite Asia Minor*, 1929; G. Hemph, *History and Language of the Hittites*, 1931; A. Walther, *The Hittite Code*, 1931; I. J. Gelb, *Hittite Hieroglyphics*, 1932; L. Delaporte, *Les Hittites*, 1936.

Hittorf, Johann Wilhelm (1824-1914), Ger. physicist, b. at Bonn. At Munster he was prof. of physics and chem. from 1852-79 and director of physical laboratories from 1879-89. Resigned on account of ill-health; but, having recuperated, continued his labours. In 1862, H. and Plücker discovered the influence of temp. on the spectra of substances. In 1869, H. performed experiments in relation to the passage of electricity through rarefied gases (which later led to the Crookes Tube and Röntgen Rays)—noticing, *inter alia*, the defective influence

exercised by a magnet on the rays proceeding from the cathode. H. investigated allotropic forms of selenium and phosphorus—producing black crystals of the latter. He contributed many papers to Poggendorff and Wiedemann's *Annalen der Physik*. A famous one, *Über die Wanderung der Ionen während der Elektrolyse*, was trans. into Eng. 1899.

Hivites, one of the Canaanite tribes or races who were expelled by the Israelites when entering Palestine under Joshua (Jo. xxiv. 11). They seem to have dwelt in Central Palestine: e.g. Gibeon (Jo. ix. 7) and Shechem (Gen. xxxiii. 18) were cities. The origin of the name is in doubt, but the suggestion that it simply means 'villager' is inconsistent with their dwelling in the above mentioned cities. A remnant of their descendants survived until the time of Solomon (I Kings x.).

Hjörning, anct. city of Denmark in the N. of Jutland, 7 m. from Jammer Bay. It is the cap. of H. co. ('amt'), and is on the Jutland Railway. Pop. 11,000.

Hkamti Long, collection of seven Shan states controlled by Burma, and bounded northward by the Mishmi region, E. and S. by various Chingpaw (or Kachin) communities, and westward by the Hukawng valley. The estimated area and pop. of this little-known country are 200 sq. m. and 8000 respectively.

Hlassa, see LHASSA.

Hoadly, Benjamin (1676-1761), Eng. divine, graduated as M.A. from Catherine Hall, Cambridge, and, after holding several minor livings, became in turn bishop of Bangor (1715), Hereford, Salisbury, and Winchester (1734). An eminent theological controversialist, he strongly upheld the doctrines that the church is subject to the jurisdiction of the civil magistrate, and that its authority does not extend to the individual conscience. The first is expounded in his *Measures of Submission to the Civil Magistrate*, etc., and the second his celebrated sermon on the 'Kingdom of Christ,' which gave rise to the Bangorian dispute, and so exasperated and disorganised the lower house of convocation that to this day it has never been allowed to despatch any but formal business. H. anticipated many of the modern Unitarian views, and in his own day was both praised and blamed as a latitudinarian and as a rationalist. His works were ed., with a life, by J. Hoadly (1773).

Hoang-Hai, see YELLOW SEA.

Hoang-Ho, or Hwang-Ho, see YELLOW RIVER.

Hoare-Laval Pact, pact signed by Brit. and Fr. representatives in 1935 in the hope of settling the conflict between Italy and Abyssinia. Abyssinia, which was being invaded by Italy, was the real test of the League of Nations and the turning-point of its fortunes. In the Mediterranean the members of the League could have assembled naval forces, with secure bases, easily sufficient to cope with Italy if the need arose. Ger. rearmament was then only in its beginnings. Amer. co-operation in arms was not essential. The Brit. and Fr. navies by themselves had ample power to cut the communications between Italy

and E. Africa. At Geneva 50 States aligned themselves against Italy; only 3—Austria, Hungary, and Albania—supported her. Certain economic sanctions had been agreed upon and applied. All that was necessary was that they should be extended to the supply of oil to make it impossible for Italy to wage effective war. There was good reason to believe that the United States would take part in such an embargo. But at that moment the Fr. gov. wavered: the sinister figure of Laval (*q.v.*) had emerged in control. Then the Brit. gov. of Mr. Baldwin weakened. In Dec. 1935, without any consultation with the League, the H. agreement was signed. Instead of pressing home the economic measures against Italy, it was Abyssinia that was to be constrained. Under the Pact she was to be called upon to surrender almost half her ter. with the sure prospect that the rest would be taken at the next opportunity. A storm of protest burst in Britain and France. Sir Samuel Hoare (foreign secretary) resigned; Laval was dismissed from his premiership. The Council of the League refused even to consider the proposals of the Pact. But the mischief had been done. From that moment the heart was taken out of the League of Nations. Its moral authority disappeared. After a few months the sanctions against Italy were formally ended. The It. campaign, aided by poison gas, was pushed to a victorious end; and it was not long before the next Brit. Prime Minister, Mr. Neville Chamberlain, visiting Rome, proposed at a banquet the toast of 'The king of Italy, emperor of Ethiopia.'

**Hoare, Sir Samuel John Gurney, see** TEMPLEWOOD, VISCOUNT.

**Hoar-frost** adorns trees, grass, and twigs in winter, because they freely radiate their heat. The cause of its formation is as follows: On a clear night dew is deposited because after sunset the earth cools and lowers the temp. of the atmosphere in contact, until its moisture begins to condense. This it will do as soon as the temp. has fallen below that

point at which the air would just be saturated by the amount of aqueous vapour which happens to be present. Now H., instead of dew, is precipitated when at the time of its formation the temp. is already below freezing-point ( $32^{\circ}$  F. or  $0^{\circ}$  C.). It is therefore not frozen dew, as such an expression would imply that the vapour was first of all deposited as dew, but rather water directly deposited in a solid form. If the dew-point is below  $32^{\circ}$  F., gardeners should screen young or delicate plants from the atmosphere, as there is every likelihood of a H.

**Hoarseness**, condition of the voice in which the sound is diminished in intensity and purity; it is usually accompanied by a feeling of pain or undue effort in producing sounds. H. is caused by the swelling or roughness of the vocal chords, the vibration of which causes the sound which we know as voice. It is possible that the roughness of these ligaments is sometimes due to fatigue or lack of tone in the muscles and nerves controlling them, but in the majority of cases there is definite inflammation of the mucous membrane of the larynx. H. is therefore usually indicative of some form of laryngitis, and should never be neglected. Inflammation may be set up as the effect of irritating vapours or dust, or as the result of a cold extended downwards from the nose or throat; it may be induced by fatigue through excessive use of the voice, or may accompany some other disease, such as influenza. The swelling of the parts which interferes with normal voice-production may progress so as to constitute a danger to respiration. An attack of H. should therefore be construed as a symptom of laryngitis. Neglected H., particularly if associated with excessive use of the voice, may lead to a chronic condition in which a certain amount of inflammation is always present, and a more or less permanent change in the constitution of the pharyngeal membrane may take place. The treatment for laryngitis is rest in bed, inhalations of friar's balsam (a teaspoonful to a pint of hot water and the steam inhaled), cold or hot fomentations to the throat, and aspirin in small doses internally. Chronic laryngitis demands examinations of the larynx by a doctor who is accustomed to use a laryngoscope. The first essential in its treatment is rest for the voice, and sometimes silence must be maintained for a prolonged period. A simple alkaline douche, which clears a blocked nose, may be very helpful in this condition, but application of oily or astringent preparations to the larynx may be necessary. This, however, requires the skilled hand of a surgeon.

**Hoar-stones**, called **Hare Stones** in Scotland. They are single blocks of unwhewn stone, which now serve the purpose of boundaries, but which must at one time have been commemorative. Usually they stand alone, though rarely a ring is indicated by pieces of rock clearly arranged by human agency.

**Hoatzin**, or **Hoszin**, name given to the



HOATZIN

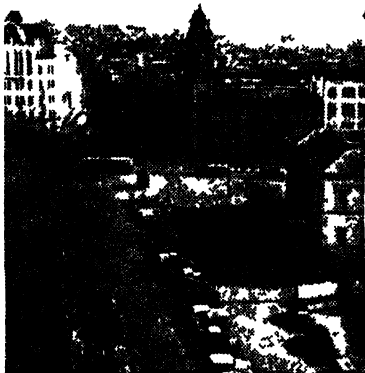
galliform birds belonging to the family Opisthocomidae, which consists of the single genus and species, *Opisthocomus cristatus*. They are fowl-like in appearance and about the size of a pigeon, the plumage is olive with white markings, and reddish underneath, the sternum has a large patch of thick, naked skin, on which the bird generally rests. They are chiefly arboreal, nesting on low trees or shrubs, but are also able to swim and dive. The H., which ranges from Guinea to Venezuela, is also called the stink bird, or stinking-pheasant, because of its strong, musky odour.

Hoazin, see HOAZIN.

Hobart, cap. of Tasmania in the co of Buckingham, 100 m. S. of Launceston on the S. shore of the is. Situated at the foot of Mt Wellington (4166 ft.) amid delightful scenery, of which the bay of Sullivan's Cove is a picturesque feature, it draws many visitors from New S. Wales and Victoria, especially at the trout fishing season and during the time of the Derwent regatta. Its deep and sheltered harbour on the R. Derwent can accommodate vessels of the largest tonnage afloat. Both the *Queen Mary* and the *Queen Elizabeth* have anchored there. Docks, wharves and warehouses have been built. There are numerous saw and flour mills, iron foundries, and potteries, etc. The Australian Newsprint Mills and the Electrolytic Zn Works are estab. in the vicinity. There are important industries dealing with the processing of small fruits, apples, and pears. It is the see of an Anglican bishop and a Rom. Catholic archbishop, and possesses many fine squares, parks, and buildings, among which the Univ. tn hall, and St. Mary's Cathedral deserve especial note, and also a statue of the explorer, Franklin, who was governor here from 1837 to 1843. Here, too, are parliament buildings. Pop. 70,000. See Isabel Dick, *Wild Orchard* 1916, F. Hurley, *Garden of Tasmania*, 1947 and C. Barrett, *Isle of Mountains*, 1948.

Hobart Pasha, Augustus Charles Hobart-Hampden (1822-86) admiral of the Turkish fleet, the son of the earl of Buckinghamshire. Having won his captaincy in the Eng. navy, he retired in 1862. As block-ade runner during the Amer. Civil war, he gained considerable distinction, but his daring and strategic ability were most in evidence during his blockade of Crete at the time of the insurrection, and during the Russo-Turkish war (1878), when he cleared the Black Sea of the enemy. He had entered the Turkish navy in 1867.

Hobbema, Meindert (1638-1709), Dutch landscape painter, was a contemporary of Berchem Van de Velde, and Wouverman, who sometimes inserted animals and figures in his pictures. Save that he married, died in poverty like Rembrandt, Hals, and Jacob Ruysdael, and was buried in the pauper section of an Amsterdam cemetery, little has survived either about his personality or life. In this country he is honoured chiefly for his 'Avenue at Middelharnis' 1889 (National Gallery, London), but his masterpieces are scattered over the museums of Antwerp, Brussels, Leningrad, Dresden, Rotterdam, etc. H.



Australian Government

#### HOBERT

Elizabeth Street, the main shopping centre of the city from Franklin Square. Facing the square is the Town Hall and in the opposite corner is the General Post Office.

was content to paint his native woods and mills, hedgerows and pools, winding tracks and leafy cottages, but his manipulation of cloud and light, the truth and finish of his varied foliage, and the sympathy with which he expresses nature in her moods of tender melancholy and puritanic calm, prove him the equal of Ruysdael in all except the breadth of his range. See monographs by W. von Rode 1917, and G. Brouillet, 1933.

Hobbes, John Oliver (pen-name of Mrs. Pearl Mary Theresa Craigie, née Richards) (1867-1906) Amer. novelist, made an unhappy marriage (1886), which was dissolved on her petition in 1891. Reared in an atmosphere of Nonconformity she entered the Rom. Catholic Church in 1892, and that mystical philosophy which so pervades *The School for Saints* (1897) and its sequel, *Robert Orange* (1900), was assuredly the cause or effect of this conversion. Her positive genius for epigram is conspicuous in her first pub., *Some Motions and a Moral* (1891), and likewise in her *Love and the Soul Hunters* (1902). As a dramatist she was most successful with *The Ambassador* (1898) though as joint-author she shared in the success of *The Bishop's Move* (1902). See biographical sketch by J. M. Richards in *The Life of John Oliver Hobbes, told in her Correspondence with her Friends*, 1911.

Hobbes, Thomas (1588-1679), Eng. philosopher, the son of a clergyman, b. at Malmesbury, April 5. He graduated at

Magdalen College, Oxford, and between 1610 and 1637 thrice went abroad as private tutor with the Cavendish family, visiting France and Italy, where he made the acquaintance of the Cartesian Father Mersenne and of Galileo. Many other illustrious men, including Ben Jonson, Bacon, Lord Herbert of Chobury, and, among foreigners, Descartes and Cosimo de' Medici were counted among his friends. His political principles were fundamentally opposed to those of the Long Parliament and from 1640 to 1652 he lived in France lest his opinions, mostly expressed in works then only in MS., should attract hostile attention. The plan of his philosophic work had already been formed and it was in this period that most of his works appeared. When his unorthodox opinions, particularly his ideas on religion, brought him into collision with the Church and the exiled court, he returned to England, submitted to the council of state and finally went into retirement in Hardwick, where he wrote a trans. of the *Iliad* and the *Odyssey* (1676), *Behemoth* (1680), and an autobiography in verse. For some time he was mathematical tutor to the Prince of Wales (afterwards Charles II.), and though, after the issue of the *Leviathan* (1651), his pupil forbade him his presence, yet the pension he freely gave to H. on his accession (1680) showed that he knew no other feelings than gratitude and respect for his former teacher. The Homeric and Thucydidean trans., and likewise the many controversial writings of the philosopher, which at the time loomed so important, have long been condemned to the dust of oblivion; his *Behemoth*, or narrative of the Civil War (1640-60), is now a curiosity in literature. But his *De Cive* (1642 and 1647), and his *magnum opus*, the *Leviathan*, both of which were censured by parliament in 1666, gave 'an extraordinary impulse to the spirit of free inquiry in Europe' and have won for their author the title of founder of political science, as other of his works make him the true father of Eng. psychology. In 1640 he wrote a treatise in defence of the royal prerogative. H., who was besides a great stylist and one of the first to deem his native language worthy of expressing abstruse thought, taught that the end of philosophy was social, and that theology and transcendentalism did not come within its sphere; that the basis of all gov. is force and that, whereas to be effectual every gov. must be supreme, the spiritual must ever give way to the temporal, and the people must implicitly accept not merely the laws but the mode of faith which the king or his ministers have seen fit to ordain. Hobbes, like Bacon, asserts the practical value of knowledge and concentrates attention on nature and man to the exclusion of the supernatural; but he differs from Bacon on the appropriate method of inquiry. Bacon regarded induction as the chief means of investigation, whereas H. held that the deductive or synthetic method was superior to the analytic and, deeply impressed by the logical demonstrations of Euclid's *Ele-*

ments which he saw for the first time at the age of forty, always adopted the mathematical demonstration of his philosophic truths. He was fundamentally a materialist, seeking the basis of all knowledge in sensation, and from this material or mechanical conception of nature and man, he deduced his whole system of natural and civil philosophy. The latter, presented in his *Leviathan*, is the study in which his thought has had its most profound effect. The ethical and political philosophy of *Leviathan* may be briefly summarised: man in a state of nature is entirely motivated by appetite and desire and since all men are engaged in the attainment of their own objects of desire, altruism (a word, however, only invented by Herbert Spencer) has no place in their original nature—with the result that man's natural state is one of strife, enmity and war. Hence man must find a remedy by agreeing with his fellows to submit to a stronger power, and thus a commonwealth is estab. on the implied basis of a mutual covenant—a concept analogous to Rousseau's *contract social*, except that H.'s view of the natural man as a selfish being is remote from the ideal of Rousseau. See monographs by G. O. Robertson, 1886; Sir L. Stephen, 1904; A. E. Taylor, 1908; G. Catlin, 1922; and J. Laird, 1934.

Hobbs, John Berry ('Jack'), (b. 1882) Eng. cricketer; b. at Cambridge; eldest of twelve children of John C. Hobbs (d. 1902), professional cricketer on the ground-staff at Fenner's. As a boy, H. first batted in Jesus College Close with choir-boys of that college. As an amateur H. played for Cambridge. His first century was scored when he played for Alnsworth against Cambridge Liberals. This was in 1901; and in a charity match the same year his opponents included T. Hayward, who failed to bowl him out. In 1902 he was engaged professionally at Bedford Grammar School. The same year he returned to Cambridge as a professional. Through the influence of F. C. Hutt, he was tried at Kennington Oval, and taken on by the Surrey Club, April 23, 1903. He played for Cambridgeshire (2nd class) in 1904; and in 1905 went into the Surrey co. team—for them he scored 155 against Essex that year. Thenceforth he was continually in the eye of the cricketing world. With Sandham, made 428, for first wicket for Surrey, June 25, 1926—then a first-wicket record; also made highest record for Lords 316 runs, in Aug. 1926. Made 100th century for Surrey in 1927 and altogether made 197 centuries in first class cricket. In the season of 1925 he scored 3024 for 48 innings; from 1907 to 1930 he was prominent in the Tests against Australia, having played in 41 matches; and was also in those against S. Africa. He retired from first-class cricket after the 1934 season, his aggregate of runs being 61,221 (against W. G. Grace's 54,896). He made 15 centuries in Test matches. Other records to his name are: total runs v. Australia in test matches, 3636; with Rhodes made 323 for the first wicket

partnership for England v. Australia at Melbourne in 1911-12; with Sutcliffe, first wicket record partnership in Tests against S. Africa, 268 at Lords in 1924; took part in 168 partnerships of three figures for the first wicket; made two separate hundreds in a match on six occasions; 16 hundreds during one season—1925. His highest innings was 316 not out, v. Middlesex. Pub. sev. books and wrote cricketing news for the *London Star*.

**Hobby**, or *Falco subbuteo*, longwinged, short-tailed falcon, dull grey above and mottled underneath, which visits Britain in the summer, especially the S.-E. co's. In length the female bird, which is somewhat larger than the male, is 14 in. Larks are its favourite prey, but it has been known to feed on insects. Falconers once valued hobbies for the hunt.

**Hobgoblin**, see **Goblin**.

**Hobhouse**, John Cam, Baron Broughton (1786-1869), Eng. statesman, was educated at Westminster School and at Trinity College, Cambridge. His intimacy with Byron began in his undergraduate days and endured till the latter's death. Thus he was 'best man' at the poet's wedding, wrote the historical notes to the fourth canto of *Childe Harold*, and in his company visited Portugal, Spain, Italy, and Switzerland. He began his political career as Radical M.P. for Westminster, having been already in Newgate for a satirical pamphlet pub. anonymously. But when in 1846 he sat in Russell's cabinet as president of the (Indian) Board of Control he was regarded as a reactionary by the younger Radicals. The activities of the Gk. committee in London (1824) were largely the result of his enthusiasm. See M. Joyce, *My Friend II* 1948.

**Hobhouse**, Leonard Trelawny (1861-1929), Eng. sociologist and philosopher; son of Reginald H., archdeacon of Bodmin. Fellow of Merton College, Oxford, 1887; assistant tutor, Corpus Christi, 1890—Fellow 1894. On editorial staff of *Manchester Guardian*, 1897-1902; *Tribune*, 1906-07. Soc. Free Trade Union, 1903-1905. His philosophy, a dualism called Conditional Teleology, infers a correlating principle striving toward a universal harmony that can apparently never be complete. Works include *The Labour Movement* (1893), *The Theory of Knowledge* (1896), *Mind in Evolution* (1901), *Democracy and Reaction* (1904), *Lord Hobhouse: a Memoir* (with J. L. Hammond, 1905), *Morals in Evolution* (1906), *Development and Purpose* (1913, largely rewritten, 1927), *The Metaphysical Theory of the State* (1918), *The Rational Good* (1921), *Elements of Social Justice* (1921), *Social Development* (1924).

**Hoboken**: (1) seaport on the Hudson R., in the Hudson co. of New Jersey, U.S.A. To the S. and W. lies Jersey city, and across the riv. is New York, connected by ferry and tunnel. The termini of the Delaware, Lackawanna and Western railroads are here. It is an important station on the W. Shore railways, and is connected with all world ports. Many

lines of European steamers start from here. Pencils, silk and leather goods, etc., are manufactured, and the coal industry thrives. Two important buildings are Stevens Institute of Technology (1871) and the Hoboken Academy, founded in 1860 by the Gers., who to-day make up one-fifth of the entire pop. Pop. 50,100. (2) suburb of Antwerp, Belgium. It is situated on the Scheldt, 3 m. S.W. of the city, and has the most important ship-building yards of the country, also manufs. of silver-ware, woollen goods and sugar, and iron foundries and breweries. Pop. 31,700.

**Hobson-Jobson**, corruption of 'Ya Huan! Ya Huan!', the cry of the Shites during the procession of Mohurram, which is part of one of the great Moslem festivals. It originated from Brit. soldiers in India, who thus colloquially described the celebration. Yule and Burnell used it as the title of their Anglo-Indian glossary (1886).

**Hobson**, Thomas, Cambridge jobmaster, who let out horses on hire, the choice always being limited to the one next the door, the one that had been longest in, hence the saying 'Hobson's choice.' He was the subject of two humorous epitaphs by Milton.

**Hoccleve**, or **Oocleve**, Thomas (c. 1370-c. 1450), Early Eng. poet and lawyer, a clerk in the Privy Seal Office, London, for over twenty years. He knew Chaucer, the 'fount of eloquence' and his 'maister dere,' drawing in colours the well-known portrait on the margin of one of the MSS. of his chief poem *De Regimine Principum* (c. 1411), largely compiled from the Lat. of Aegidius Colonna (c. 1280). Other poems were: *The Story of Jonathan*, and *Moder God*. . . . See Dr. F. Furnivall's (d. of Works, 1892; *De Regimine*, 1897; W. Mason's ed. of six poems, 1796; T. Wright's ed., 1860 (Roxburghe Club); Philipps MS. 81.31 (at Cheltenham) (which contains his account of his disordered life); H. Morley, *English Writers* (vol. vi., 1861-94).

**Hoche**, Louis Lazare (1768-97), general of the Fr. Revolution, enlisted, 1784, joining the National Guard, 1792. Having repulsed the duke of York, he commanded the forces on the Moselle and drove the Austrians from Alsace, 1793. He helped to suppress the Vendean revolt, 1795-96, and then headed an expedition to Ireland, which failed owing to storms, 1796. H. won sev. victories over the Austrians again in 1797, but the armistice at Leoben checked his successes, and he d. suddenly at Wetzlar soon afterwards. See E. Guillon, *La France et l'Irlande sous le Directoire: Hoche et Humbert*, 1888; A. Chuquet, *Quatre Généraux de la révolution*, 1911.

**Hochelaga**, co. and vil. of Quebec, Canada. The vil. on the St. Lawrence R. forms a suburb of Montreal, 2 m. distant. Pop. about 16,000.

**Hochester**, see **Hoxton**.

**Hochheim**, vil. of Hesse, Germany, near R. Main, 4 m. E. of Mainz. The vineyards of its slopes produce the true hock. Pop. 4000.

Höchst, tn. of Hesse on R. Main, 10 m. W. of Frankfurt of which it has been a part since 1925. Tilly defeated Christian of Brunswick here, 1623. Noted for chemical industries (I. G. Farben) and the manuf. of tobacco, beer, machinery, and furniture. Pop 35,000.

Höchststadt, tn. of Swabia, Bavaria, Germany, on R. Danube, 30 m N.E. of Ulm. Here Frederick of Stauffen was defeated by Hermann of Luxemburg, 1081, and the Austrians by Marshal Villars, 1703. The victory won by Marlborough and Prince Eugene over the Franco-Bavarian forces in 1704, fought nearby, is better known as the battle of Blenheim. Pop. 2000.

is of a curved shape, and the object is the same as in football—to score goals. The Romans had a game very similar to H., which was played on frozen ground or on the ice. In some form H. has been known to most of the N. peoples of Europe and Asia. In Scotland the game was known as 'shinty,' and in Ireland a game called 'hurley,' was played on the sea-shore; the rules were simple, and the play usually very rough in character. Modern H. is played on turf during the same time as football—from Sept. to April; it owes much of its present vogue to the formation of the Men's Hockey Association in England in 1875. The rules drawn up by the Wimbledon Club in



Fox Photos

## HOCKEY

The Universities inside left makes a shot in a match against the Weasels

Hock, strictly the white wine (sparkling or still), called in Germany 'Hochheimer,' produced at Hochheim. The Eng name 'hock' has been in use since before 1625, and is commercially extended almost indiscriminately to light white Ger wines, especially Rhenish wines. It is usually dry, but some brands are sweet. It has a distinctive flavour and bouquet and the alcoholic strength is from 9 to 13 per cent. Important brands are, Erbach, Nierstein, Rudesheim, Marcoobrunn (still), Johannisberg, Liebfraumilch, Rauenthal (sparkling). Good vintages were those of 1880, 1883, 1884, 1896, 1880, 1892, 1893, 1895, 1897, 1921, 1925, and 1929. The natural dry white wines of the Californian 'Riesling' or hock-grape slightly resemble the Ger varieties, but generally have more 'body' and are less acid.

Hockey (possibly derived from the 'hooked stick' with which the game is played; cf. *haquet*, O.F. for shepherd's crook), game played with a ball or some similar object between two opposing sides; the stick used to propel the ball

1883 still obtain in essentials. As regards the equipment and tools of a H. player the following are the more important points. A H. stick shall have a flat face on its left hand side only; there are no regulations as to length, but every stick must be of such size that it can be passed through a two inch ring. The head of a stick shall not be edged with or have insets or fittings of hard wood or of any other substance nor shall there be any sharp edges or dangerous splinters; the extremity of the stick must not be cut square or pointed but must have rounded edges. An india rubber ring of four inches external diameter may be used as a guard, but the total weight of the stick and guard and binding, if any, must not exceed 28 oz. The ball is a leather cricket ball, either, painted white or made of white leather. Boots very similar to football boots are usually worn; no dangerous materials such as spikes or nails, etc., must be worn. The rubber ring is not now much used, padded gloves being worn instead. Shin-guards are, from the



nature of the game, almost a necessity. The ground for H. is of a rectangular shape, 100 yds. long and not more than 80 yds. nor less than 55 yds. wide. The ground is marked out with white lines, of which the longer are called the side-lines and the shorter the goal-lines. Flag-posts are placed at each corner, and at the centre of each side-line, one yard outside the line. The goals are in the centre of the goal-line; their dimensions are 12 ft. wide by 7 ft. high. The posts are 2 in. broad and not more than 3 in. in depth. Nets are attached to the posts, cross-bars, and to the ground behind the goals. No shooting at goal can take place except in the striking circle, which is thus defined: In front of each goal shall be drawn a white line 4 yds. long, parallel to and 15 yds. from the goal-line. This line shall be continued each way to meet the goal line by quarter circles having the goal-posts as centres. The game is played between two teams of eleven players each, positioned as in association football. The game is started by one player of each team bullying the ball in the centre of the ground. To bully the ball, each player strikes the ground on his own side of the ball, and his opponent's stick over the ball, three times alternately; after which one of them must strike the ball and so put it in play. In all bullies the two players who are bullying shall stand squarely facing the side-lines. A player is offside if he is nearer to his opponent's goal-line than the person who last struck or rolled the ball in, unless there be at least three of his opponents nearer to their own goal-line than he is. No player can be offside in his own half of the ground, nor if the ball was last touched or hit by one of his opponents. The penalty for offside is a free hit. When a player strikes at the ball no part of his stick must in any event rise above his shoulders at either the beginning or the end of the stroke; the penalty for 'sticks,' as it is called, is a bully. In the case of breaches of the rules inside the circles a 'penalty bully,' or a 'penalty corner,' is awarded. When a penalty bully is played, all players, save the two taking the bully, shall remain beyond the nearer 25 yds. line in the field of play until the bully is completed. When a penalty corner is awarded, the player taking it shall have a hit from any part of the goal-line he may choose, at least 10 yds. from the nearest goal-post. At the moment of such hit all the defending team must be behind their own goal-line, and all the attacking team must be outside the striking circle in the field of play. A corner differs from a penalty corner only in that the hit is taken from a point within 3 yds. of the nearest corner flag. The game is in charge of two umpires, who each have charge of half of the field of play; if two umpires are not available one umpire and two linesmen take their place. Since 1895 International Matches between England, Scotland, Ireland, and Wales have been played, and Belgium and France now play England. There is an international championship, and H. is

one of the events in the Olympic Games. Co. matches are also played and Div. Association matches.

In America ice H. is so popular that the term 'hockey' is used for that variety, and the other game is called field H. The game differs from Eng. ice H. in several respects (see ICE HOCKEY).

Ice polo is a game very similar to ice H., played almost exclusively in the New England states. It is played with a rubber-covered ball and a heavier stick. Five men only play on a side, and there is no offside rule. The rink is 150 ft. in length. Ring H. is a variety of H. which can be played on the floor of any gymnasium or large room. The goals are 3 ft. high and 4 ft. in width; six men are on a side, a goal-keeper, a quarter, three forwards and a centre. A ring of 5 in. diameter, with a 3-in. hole in the middle, and weighing from 12 to 16 oz., is used instead of a ball. The stick is a light but tough wand, from 36 to 40 in. in length, 1 in. in diameter, and with a 5-in. guard at a distance of 20 in. from the lower end. The end of the stick is inserted into the hole in the ring; a goal from the field counts 1 point, and from a foul, ½ point. Roller polo is an adaptation of ice polo to roller skating rinks, and is very popular in the U.S.A. Five players form a side. See K. E. White, *The Hockey Player*, 1909; E. H. Green and E. E. White, *Hockey*, 1912; M. Pollard, *Hockey for Women*, 1931; E. Green, *The Arts of Hockey*, 1931; E. Ricketts, *Hockey Manual for Umpires and Players*, 1932; P. Robson, *A Manual of Hockey*, 1934; D. S. Milford, *Hockey*, 1938; T. S. Dagg, *Hockey in Ireland*, 1945.

**Hocking, Joseph** (1855-1937), Eng. novelist, b. in Cornwall, younger brother of Silas K. H. (q.v.). Educated at Owen College, Manchester, and became a land-surveyor in 1878; but left this profession in 1884 and entered the Nonconformist ministry (United Methodist Free Church) —for the next few years travelling in Egypt, Palestine, Greece, Turkey, and Syria. His pubs include:—*Jabes Easterbrook* (1891), *Story of Andrew Fairfar* (1893), *Fields of Fair Unknown* (1896), *The Scarlet Women* (1899, which caused some stir in Free Church circles), *The Purple Robe* (1900), *The Trampled Cross* (1907), *God and Mammon* (1912), *The Pomp of Yesterday* (1918), *Rosemary Carew* (1925), *The Eternal Challenge* (1929), *Out of the Depths* (1930), *The Man who Found Out* (1933), *The Squire of Zabulor* (1935), *Deep Callet Deep* (1936).

**Hocking, Silas Kitto** (1850-1935), Eng. novelist, b. at St. Stephen's, Cornwall; third son of James H. Educated for the ministry of the limited Methodist Free Church and ordained minister in 1870. He made his reputation as a writer in 1878 with a story *Her Benny*, and many others followed, most of them being very popular among readers who prefer plot to literary merit. Among his other stories, which number 90, are *Alce Green* (1878), *The Awakening of Anthony Ivier* (1901), *Pioneers* (1905), *The Third Man* (1911), *When He Came to Himself* (1915),

*Watchers in the Dawn* (1920), *My Book of Memory* (1923), *The Mystery Man* (1930), *Gerry Storm* (1934).

**Hocktide**, formerly a popular festival in England, kept on the second Monday and Tuesday after Easter. Hock Tuesday and Michaelmas were the rent-days in rural England. The derivation is uncertain; the term hock-day was in use by the twelfth century. The chief pastime was that of 'binding' members of the opposite sex (men on Monday, women on Tuesday) till a small payment was made for release. The money was used for church or par. purposes. 'The Old Coventry Play of Hock-Tuesday' was revived on Elizabeth's visit to Kenilworth (1575). See J. Brand, *Popular Antiquities*, 1777; W. Hone, *Every-day Book*, i., 1826.

**Hoddesdon**, par. and vil. of Hertfordshire, England, 4 m. S.E. of Hertford, 14 m. from Broxbourne Junction. Isaac Walton used to fish here on the R. Lea, whose waters fill the moat of the old Rye House 1 m. away, where, had the plot not gone astray, Charles II. and his brother James would have been assassinated in 1683. It was a coaching station on the Old North Road. Pop. 7000.

**Hodeida**, **Hodaida**, or **Hodidiah**, fort and seaport of the Yemen, Arabia, on the E. coast of the Red Sea, 100 m. from Mocha. A harbour is to be built at Ras-el-Ketib, 10 m. away. A railway connects H., Ras-el-Ketib, Sana'a, and Amran. The chief exports are: Coffee, skins, cotton, and some pearls, senna, myrrh, sesame, and jowar (a kind of millet). Other grains are imported. H. was bombarded and occupied by the Brit. in 1918. Pop. 40,000.

**Hodgkin, Thomas** (1831-1913), Brit. historian, b. in London, of a Quaker family. After graduating at the London Univ. he entered business as a banker, at the same time applying himself to historical study, and soon becoming a leading authority on the hist. of the early Middle Ages. His chief works are: *Italy and Her Invaders* (8 vols., 1880-99), *The Dynasty of Theodosius* (1889), *Theodoric the Goth* (1891), *Life of Charls the Great* (1897), and vol. i. of Longmans' *Political History of England* (1906).

**Hodgson, Brian Houghton** (1800-94), Eng. Orientalist, entered the E. India Company's College at Haileybury, 1816, becoming a servant of the company, 1818. He was resident in Nepal, 1820-43, returning to England, 1858. He wrote valuable papers on the ethnology, languages, and zoology of Nepal and Tibet, including *Miscellaneous Essays on Indian Subjects* (1880). The libraries of London, Paris, and Calcutta have his collections of Oriental MSS. See life by Sir W. Hunter, 1896.

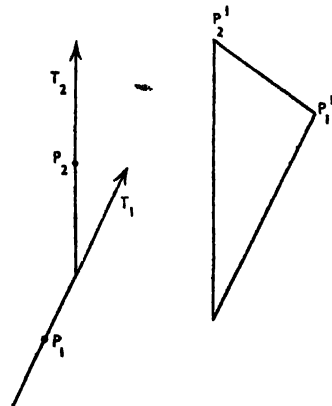
**Hodgson, Ralph** (b. 1871), Eng. poet and prof. of Eng. literature at the Imperial Univ. of Japan. Mingles fantasy and actuality in his songs of innocence and of experience. A number of his poems are expressions of original happiness contrasted with something like the shock of disillusionment—contrasts not

in the way of philosophical opposites, but given as 'poetic apprehensions.' The poem *The Bull* is an illustration, and in this poem, and others like *The Bells of Heaven* and *Stupidity Street*, pity for dumb animals excites an all-too-impotent wrath. He has a peculiar ecstasy of his own, notably exemplified in *The Mystery*, *The Royal Mails* (an original fable), and *The Bells of Heaven*. Some of his lyrics are as fine as any in the language, notably *The Last Blackbird*, which appeared in 1907. His longest and most elusive poem, *The Song of Honour*, is a piece of virtuosity in doggerel metre; his *Ere* is notable for its word-colour, and *The Gypsy Girl* a short but striking dramatic poem. His *Poems* were pub. in 1917. Sev. of his poems appear in *Georgian Poetry*, 1911-17 (3 parts), ed. by Sir Edward Marsh. Awarded Pollignac Prize.

**Hodgson, Shadworth Hollway** (1832-1912), Eng. metaphysician; b. at Boston, Lincs.; son of Shadworth H. Educated at Rugby, and Corpus Christi College, Cambridge. First President of Aristotelian Society, 1880-94. He had tremendous erudition, but was handicapped by an involved style of expression. He claimed to have estab. a system, without ontological assumptions, on the lines of Hume. Works include *Time and Space* (1865), *The Philosophy of Reflection* (1878), *The Metaphysics of Experience* (1898).

**Hodmező-Vásárhely**, tn. of Hungary; connected by rail with Szolnok and Mako. Pop. 60,000.

**Hodograph**. If a point P (see diagram) be moving in any path, and from any fixed point O a vector  $OP^1$  be drawn parallel



and proportional to the velocity of P, then the locus of  $P^1$  is called the H. of the path of P. Let  $P_1$  and  $P_2$  be two consecutive positions of P, the time from  $P_1$  to  $P_2$  being very small. Then the tangents  $T_1T_2$  and  $P_1T_2$  at  $P_1$  and  $P_2$  to the path of P are the directions of motion at P, and  $P_1$ . Draw  $OP_1$  and  $OP_2$  parallel to  $P_1T_1$  and  $P_2T_2$ , and proportional to the

velocities at P, and P, respectively. Then by the triangle of velocities, P<sub>1</sub>P<sub>2</sub> represents, in magnitude and direction, the change of velocity of P during the small time, i.e. P<sub>1</sub>P<sub>2</sub> is proportional to the acceleration of P. As P traces out its path, so P<sub>1</sub> traces out the H. and the velocity of P<sub>1</sub> in the H. represents, in magnitude and direction, the acceleration of P in the original curve. In particular, if P moves with a uniform velocity in a circle, P<sub>1</sub> describes a circle with a uniform velocity. Hence P has a constant acceleration.

**Hodometer, see PYROMETER.**

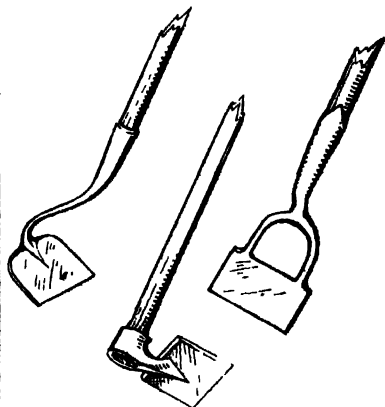
**Hodson, Major William Stephen Raikes** (1821-68), Anglo-Indian soldier, leader of light cavalry in the Indian Mutiny, usually known as 'Hodson of Hodson's Horse.' Educated at Rugby and Cambridge, he joined the Indian army in 1845, fighting in the first Sikh war. Rising to be commander of the Punjab Corps of Guides, 1852, he was dismissed in 1855 for harsh administration and alleged errors in the regimental accounts. On the outbreak of the Mutiny he rode with despatches from Karnal to Meerut and back, and was allowed to raise his famous regiment of horse (Corps of Guides, Punjab Irregular Force) and became head of the Intelligence Dept. He helped in the reduction of Delhi, and afterwards brought in Bahadur Shah, the last of the Moguls, as prisoner, but shot the three princes down to overawe the mob. His conduct over this and over money matters has been severely censured, and he was even accused of 'looting.' He was killed in an attack on Lucknow. See G. Hodson, *Hodson of Hodson's Horse*, 1833; Bosworth Smith, *Life of Lord Lawrence* (app. to 6th ed.) 1885; T. R. Holmes, *Four Famous Soldiers*, 1889; and *History of the Indian Mutiny*, 1899; L. T. Trotter, *A Leader of Light Horse*, 1901; and Sir C. Chamberlain, *Remarks on Captain Trotter's Biography of Major W. S. Hodson*, 1901.

**Hodza, Milan** (1878-1944), Slovak statesman, son of a Protestant pastor. Entered the Hungarian Parliament in 1905 as the sole Slovak representative. Interned in 1914 for systematic criticism of the Hungarian gov. Was one of the leading advocates of co-operation between the different ethnical elements in the Czechoslovak State, of which he was the first diplomatic representative at Budapest. Afterwards he entered the first Czech Parliament and between 1919-35 was successively minister of unification, agriculture, education and, once again, agriculture. He was the champion of a policy based on Czechoslovak political support of the ideal of a commonwealth of sovereign independent Central European States, linked together by 'co-operative solidarity.' In his *Federation for Central Europe* (pub. 1942) he advocated a Federation of Danubian States for mutual protection against 'colossal neighbours.' In 1935, when the political horizon was growing black, he became Prime Minister. He hastened the realisation of Ruthenian home rule, which was

estab. in 1937. He resigned just before the Munich Pact for he foresaw only too clearly what terms would be imposed on his country. He became Vice-President of the Czechoslovak State Council in London, but controversies over his foreign policy and his peasant policy of agrarian democracy widened the breach between him and Dr. Benes and he preferred to migrate to the United States, where he died.

**Hoe, Richard Marsh** (1812-86), Amer. inventor, b. in New York City, son of Robert H., a mechanic. He estab. a manufactory of printing-presses, using steam to run the machinery, in New York City in conjunction with two brothers-in-law, and became head of his father's firm soon after. His prin. invention was the printing-machine known as the H. rotary or 'lichtuig' press, patented in 1846.

**Hoe** (Fr. *houe*, modern Ger., *Haue*), implement used in gardening and agriculture for extirpating weeds, singling out root crops, stirring the surface-soil, and such-like purposes. The ordinary garden H.



HOES

Swan-necked Hoe, Draw Hoe, and Dutch Hoe

has a flat blade set transversely in a long wooden handle, and the best one for agric. purposes is the swan-neck H., having a long curved neck joining the blade to the handle. There is also the Dutch or thrust H., with the blade fixed into the handle as in a spade. Besides these there are sev. types of horse-drawn Hs. used among root and grain crops, and capable of working one or sev. rows at a time.

**Hook van Holland, see HOOK or HOLLAND.**

**Hoenir**, lesser god of Norse mythology, found always in the company of (Odin) and Loki. Though fair in aspect and spoken of by the Vanir (gods of the atmosphere), to whom he was given as hostage by the Aesir, he plays no prominent part

as one of the triad. When consulted his invariable answer was 'Let others advise'; so Mimir had to be sent with him to the Vanir and the gods lost their chief counsellor. He is described as the lord of the Ooze, and is sometimes represented with long legs like a stork. II., with Odin and Lodhurr, gave life to the first human beings. He was the first to use the divining rod. Some identify him with Tyr. Uhlund calls him the singer. He played an important part when, after the last great battle and the destruction of the world, it rose afresh from its ashes.

Hof: (1) tn. in N.E. of Bavaria, Upper Franconia, 30 m. N.E. of Bayreuth, on the Saale. It was destroyed by fire in 1823, since when it has been almost entirely rebuilt. Before the Second World War H. was a noted seat of the textile industry, and had manufs. of calico, cloth, and hosiery. It has a hospital founded in 1262, and some interesting churches. Jean Paul's earlier years are closely associated with the tn. Pop. 45,000. (2) Tn. in Norway, 50 m. N. of Christiania. Pop. 5000.

Hofser, Andreas (1767-1810), Tyrolese patriot peasant-leader, b. at St. Leonard in the Passier valley, where his father was an innkeeper, which trade H. inherited, and in addition dealt in wine and horses with the N. of Italy. In 1809 he called the Tyrolese to arms to expel the Fr. and Bavarians, and they responded with ardour, and swept the latter out in seven weeks, overwhelming them at Sterzing. By this victory the Austrians temporarily occupied Innsbruck and H. was conspicuous amongst the insurgent leaders. By the treaty of Schönbrunn, the Tyrol was again ceded to Bavaria, and although H. again took up arms, he had to disband his followers and seek refuge in the mts., where he was betrayed, captured, and shot. See lives by K. T. Helgel, 1875; and A. von Bossi-Fedrigotti, 1935.

Höfding, Harald (1843-1931), Dan. philosopher: b. in Copenhagen where he was educated. School teacher, 1861-1871; then prof. in univ. of Copenhagen. He progressed, from the opinion of Kierkegaard with relation to the separateness of Faith and Knowledge, into Positivism with qualifications. Works include: *Den engelske Filosofi i vor Tid* (1874), *Den humane Etik* (1876), *Psykologi i Omrids paa Grundlag af Erfaring* (1882), *Etik*, (1887), *Psykologiske Undersøgelser* (1889), *Kontinuiteten i Kant's filosofiske Udviklingsgang* (1893), *Den nyere Filosofis Historie* (1894-95), *Det psykologiske Grundlag for logiske Domme* (1899), *J. J. Rousseau og Naars Filosofi* (1896), *Mindre Arbejder* (1899-1905), *Religionsfilosofi* (1901), *Modernere Filosofer* (1904, Eng. trans., 1914), *Den menneskelige Tanke, dens Former og dens Opvarer* (1910), *Bergson's Filosofi* (1914), *Oplevelse og Tydning* (1918), *Erkendelsesteori og Livsopfattelse* (1926), *Religiøse Tanketyper* (1927), *Erindringer* (1928), *Erkendelsesteoriens nærværende Stilling* (1930).

Hoffmann, August Heinrich, known as Hoffmann von Fallersleben (1798-1874), Ger. poet and philologist, b. at Fallersleben

in Lüneberg, his father being the mayor of the tn. He was educated at Göttingen and Bonn, his original intention being to study theology. He soon abandoned this for literature, and in 1823 became custodian of the univ. library at Breslau, and later on prof. of Ger. there. In consequence of his pub., *Unpolitische Lieder* (1840-41) in which was 'Deutschland, Deutschland über Alles' he was obliged to resign his chair, and then travelled for three years, returning to Prussia after the revolution of 1848. He wrote, *Horas Helgice* (1830-62), *Geschichte des Deutschen Kirchenlieds* (1832), *Soldatenlieder* (1869-70), *Mein Leben* (autobiography ed. by F. Gerstenberg 1892-94). A selection from his works was ed. by H. Benzmann (1924). See lives by J. M. Wagner, 1869-1870 and H. Reuter, 1921.

Hoffmann, Ernst Theodor Wilhelm (1776-1822), Ger. writer and composer, b. at Königsberg. He assumed the name Amadeus in place of Wilhelm in homage to Mozart. In 1792 he entered the univ. of his native city to prepare for a legal career, and in 1795 began to practise as a jurist at Königsberg, subsequently going to Berlin; but music interested him more than his legal duties. In 1796 he was appointed assessor at Posen; but his brilliant powers of caricature got him into trouble, and he was obliged to leave Posen. In 1804 he was transferred to Warsaw, where he made the acquaintance of Werner, but was forced to quit office in 1806, when Warsaw was occupied by the Fr. For the next ten years he led a precarious existence, supporting himself by composing and giving music lessons. In 1816 he was appointed councillor of the Court of Appeal. Some of his shorter tales appeared in the collection *Phantasie-stücke in Callots Manier* (1814), and were followed by the gruesome novel, *Die Elzmiere des Teufels* (1815-16). Two other collections are *Nachstücke* (1817) and *Die Serapionsbrüder* (1819-21) the latter of which includes pictures of Ger. life and incidents from It. and Fr. hist., as well as gruesome tales; indeed it contains *Das Fräulein von Scudéri*, generally considered his best work. Other books of his are *Klein Zaches* (1819), and the autobiographical *Lebensansichten des Katers Murr* (1820-22). His fairy tales, *Der Goldene Topf*, were trans. by Carlyle in *German Romance* (1827). He also wrote an essay on Mozart's *Don Juan*, and composed an opera on Fouqué's *Undine* (1816). Offenbach's opera, *The Tales of Hoffmann*, is founded on some of his tales. H. was one of the master novelists of Ger. Romanticism, and his works are remarkable for their humour and realism. His collected works, ed. by G. Ellinger, were pub. in 1894; his letters and diaries ed. by H. Müller, in 1812 and 1815 respectively. See studies by W. Harich, 1920; E. Kroll, 1923; K. Ochsner, 1936; and W. Hergengrün, 1940.

Hoffmann, August Wilhelm (1818-92), Ger. chemist, b. at Glessen. He first studied law and philology at Göttingen, but later turned his attention to chem., and in 1845 was appointed director of the

Royal College of Chem. in London. From 1866 to 1868 he was chemist to the Royal Mint, when he returned to Berlin as prof. of chem. and spent the rest of his life in that city. His work covered a wide range of organic chemistry—his contributions to the scientific journals were mainly on this subject. He also devoted much labour to the theory of chem. types. His chief works are: *Introduction to Modern Chemistry* (1865), *The Life-Work of Liebig* (1876), and *Chemische Erinnerungen* (1882). See *Memorial Lectures delivered before the Chemical Society, 1893-1900* (London).

Hofmann, Josef Casimir (b. 1877), Polish pianist, b. at Cracow. Pupil of his father (prof. at Warsaw Conservatory). Made his appearance before the public at the age of six, and three years later made a tour of Europe, becoming a celebrated musical prodigy. Visited the United States in 1887-88 and, after studying two years under Rubinowitz, made his debut at Dresden in 1894. Has pub. pianoforte compositions and is one of the leading modern pianists. Since 1898 has lived principally in America. Director and Dean of Curtis Institute of Music, 1926-33.

Hofmannsthal, Hugo von (1874-1929), Ger. poet and dramatist, b. at Vienna, where he was educated. Literary success came to him early, with the pub. of two or three books of poems before he was twenty. Later in his career he produced a number of romantic plays and also furnished the librettos for sev. of Richard Strauss's operas: *Elektra* (1909), *Der Rosenkavalier* (1911), *Aradne auf Naxos* (1912), *Die Frau ohne Schatten* (1919), *Die ägyptische Helena* (1920). His works (besides the above-mentioned librettos) include: *Gestern* (1891), *Des Tod des Trizian* (1892), *Des Tod und des Tod* (1893), *Der Abenteuerer und die Sängerin* (1899), *Elektra* (1903), *Kleine Dramen* (1907), *Prosaische Schichten* (1907), *Gedichte* (1910, 1922, 1925), *Christinas Heimreise* (1911), *Jedermann* (1912), *La Légende de Joseph* (1914), *Alkestis* (1916), *Der Schwelger* (1921), *Ideen und Aufsätze* (1921), *Die Hochzeit der Sobeide* (1922), *Das Salzburger Grosse Welttheater* (1922), *Florindo* (1923), *Der Unbestechliche* (1923), *Deutsche Epigramme* (1923), *Der Turm* (1925), *Drei Erzählungen* (1927). See studies by O. Heuschele, 1929; H. Tembrinus, 1932; K. J. Naef (with bibliography), 1938, and E. Brecht, 1916.

Hofmeister, Wilhelm Friedrich Benedict (1824-77), Ger. botanist, b. at Leipzig, where he was educated and entered business as a music-dealer, studying botany in his spare time. In 1863 he was appointed to a professorship in Heidelberg, and nine years later was transferred to Tübingen. In 1851 he pub. his prin. work, *Vergleichende Untersuchungen der Kennung Kinfaltung und Fruchtbildung höherer Kryptogamen und der Samenbildung der Coniferen* (1851), which stands in the first rank of botanical books, and is a typical work on plant-morphology. H. also contributed two notable parts to a handbook of physiological botany, never completed, under the titles of *Die Lehre*

*von der Pflanzenselle und Allgemeine Morphologie der Gewächse*.

Hofmeyr, Jan Hendrik (1845-1909), S. African politician, b. at Cape Town, where he was educated, leaving school at the age of sixteen and becoming a journalist. He joined the staff of the *Volkevriend*, which he bought in 1861 and amalgamated with the *Zuid Afrikaan*, under the title of *Ons Land*. In 1879 H. entered Parliament, where he remained for sixteen years, becoming leader and spokesman of the Dutch party in the colony. In 1887 he was one of the Cape delegates to the first colonial conference held in London. Until the Jameson Raid of 1895 he was a supporter of Cecil Rhodes.

Hofmeyr, Jan Hendrik (1894-1948), S. African statesman and historian. Came to Oxford as a Rhodes scholar and became principal of the Univ. of Witwatersrand at the age of twenty-five. His financial acumen attracted the attention of Gen. Smuts, and at the age of thirty he was appointed administrator of the Transvaal. In 1929 he entered Parliament as member for Johannesburg and took a leading part in the movement for the reconciliation of Gen. Smuts and Gen. Hertzog and the 'reunion' of S. Africans of Brit. and Boer stock, from which the United Party originated. In the coalition gov. of 1933 he was minister for the interior, education, and public health. But his sympathies for the Bantu pop. soon made him unpopular with many of the Afrikaners. In 1936 he strongly opposed the Bill to destroy the Cape native franchise, and in 1938 he resigned in protest against the action of Hertzog in appointing as a representative of native interests in the Senate a defeated colleague with no special qualifications in that respect. When the Second World War broke out H. rejoined the gov. as minister of finance. He was often called upon to deputise for Gen. Smuts and in 1943 was formally appointed Deputy Prime Minister. In the 1948 elections his liberal attitude towards the non-European races alienated many electors, but his party supported him, and it was generally understood that he would lead it when Gen. Smuts should retire; and he remained in the forefront of the opposition to Dr. Malan's policy of segregation. His *South Africa* (1931), a hist. of the country, is instructive on native policy, the author rejecting segregation, racial fusion, and equality alike, and treating the whole problem as a question not of politics so much as economics. See T. MacDowell, *Jan Hofmeyr: His Life to Smuts*, 1948.

Hofwil, estate some 6 m. to the N. of Bern in Switzerland, which was purchased by Fellenburg to start his educational institution. See FELLENBURG, PHILIP EMMANUEL VON.

Hog. Sheep still retaining its first fleece is known as a H. in Scotland, and a hogget is a two-year-old sheep. See also PIG.

Hogarth, David George (1862-1927), Eng. archaeological explorer, geographer, and author, b. at Barton-on-Humber; eldest son of Rev. George H., incumbent

of that place. He was educated at Winchester and at Magdalen College, Oxford, and was a tutor at Magdalen 1886-88. He explored Asia Minor in 1887, 1890, 1891, and 1894. Excavated at Paphos, 1888; Der el-Bahari, 1891; Alexandria, 1895; in Fayûm, 1896; Naukratis, 1899 and 1903; Ephesus, 1904-05; Assuit 1906-1907; and Jerablus, 1911. He was director of the Brit School at Athens, 1897-1900, and conducted excavation at Cnossus and the Dictæan Cave, 1900. In 1909 he became keeper of the Ashmolean Museum, a post he held till death. In the First World War, he was director of the Arab Bureau at Cairo. C.M.G., 1918. His pubs. include: *Devia Cypria* (1900), *Modern and Ancient Roads in Asia Minor* (1892), *Philip and Alexander of Macedonia* (1897), *The Nearer East* (1902), *The Penetration of Arabia* (1904), *The Archaic Artemis of Ephesus* (1908), *Ionian and the East* (1909), *Accidents of an Antiquary's Life* (1910), *The Ancient East* (1914), *Carchemish I.* (1914), *The Balkans* (1915), *Hittite Seals* (1920), *Arabia* (1922), *The Wandering Scholar* (1923).

Hogarth, William (1697-1764), painter and engraver, and founder of the Brit School of Painting, b. in London. He began to draw at an early age and was apprenticed to a silver-plate engraver,



WILLIAM HOGARTH

Engraving after a self portrait (in the National Gallery).

finishing his time at the age of twenty when he started engraving on copper. In 1724 he pub on his own account his plate 'Masquerades and Operas, Burlington Gate,' but he first became known as an engraver by his plates for Butler's *Hudibras*, of which the last two, representing the 'Burning of Rump at Temple Bar' and the 'Procession of the Skimmington,' are the best. He next turned his attention to oil-painting, executing 'small conversation pieces, from twelve to

fifteen inches high,' and in 1731 won reputation by 'A Harlot's Progress,' a series of pictures in which he portrays the enticement of his heroine into the paths of evil, her passage through a 'Martin's summer,' as the mistress of a rich Jew, to 'Captain Macheath' and Drury Lane, to Bridewell and beating hemp, to disease and death, to a shameful funeral, and a forgotten grave. This was speedily followed by 'A Rake's Progress,' which did not meet with equal success, owing to the fact that it attacked the vices of the man instead of those of the woman. 'The Fair,' or 'Southwark Fair,' depicts the carnival suppressed in 1762. In 1738 he attempted 'the great style of history-painting,' and produced on a staircase of St. Bartholomew's Hospital two Scripture stories, 'The Pool of Bethesda' and 'The Good Samaritan,' but these did not meet with the encouragement he expected, so he again turned his attention to his former work and painted the 'Scrolling Actresses dressing in a Barn,' 'The Enraged Musician,' 'The Distrest Poet,' etc. In 1745 H had a sale by auction of his pictures, and the ticket of admission was the etching known as the 'Battle of the Pictures.' The same year his masterpiece, the 'Marriage à la Mode' (now in the Tate Gallery), appeared, which represents a variety of 'Modern occurrences in high life' and in 1716 his portrait of 'Garrick as Richard III,' for which he received £200, as well as that of 'Simon, Lord Lovat.' In 1747 he produced 'The Stage Coach' and the series 'Industry and Idleness,' in 1758 'The Invasion,' and in 1761 'The Bathos,' his last work. He also painted a portrait of himself which resulted in the pub of *The Analysis of Beauty* (1733). He is principally famous as a satirist on canvas, and as such has never been surpassed; he represented the foibles of his time in a series of engravings which exhibit character, humour, and power. Until recently little attention has been paid to H's drawings, some of which are in the royal collection and others in the possession of the marquess of Exeter. There are some 85 known and surviving examples of these. H did not, it seems, make a practice of sketching from nature, nor did he usually make studies for separate figures, in pictures and prints. Preparatory drafts of whole compositions form the majority of the drawings and of those nearly all refer to prints rather than to pictures. None of the drawings, probably, was ever intended as an end in itself, or a final expression of an idea, yet the liveliness of H's mind, his sense of fun, horror, or disgust, his feeling for character, is nearly always present in them. H's house in Hogarth Lane, Chiswick, is now a museum where some of his works may be seen. See J. Nichols and J. Steevens, *The Genuine Works of William Hogarth*, 1817; J. B. Nichols, *Anecdotes of William Hogarth written by himself*, 1833; A. Dobson, *William Hogarth*, 1879; A. P. Oppé, *The Drawings of William Hogarth*, 1848.

Hogben, Lancelot (b. 1895), Eng. zoologist, educator, and writer; educated at

Trinity College, Cambridge; Mackinnon Student of the Royal Society, 1923. Between 1919-30 held various posts as lecturer in, or prof. of, zoology and experimental physiology. Prof. of social biology London Univ., 1930-37; Regius Prof. of natural hist., Aberdeen Univ., 1937-41; Mason Prof. of zoology, Birmingham Univ., 1941-47. Visiting prof. to Wisconsin Univ. Pub. include *Nature and Nurture* (1933), *Mathematics for the Million* (1936), *Science for the Citizen* (1938), *Dangerous Thoughts* (1939), and scientific memoirs on genetics, ductless glands and medical statistics to the Proceedings of the Royal Society and other scientific journals.

Hogg, Sir Douglas McGarel, see HALLSHAM, HALON.

Hogg, James (1770-1835), called 'The Ettrick Shepherd', poet, b. at Ettrick, Selkirkshire, was the son of a small farmer. He was entirely self-educated, but at an early age began to compose verses, though the setting of these to paper was at first a task of great difficulty. He first appeared in print in 1800 with the patriotic song, *Donald McDonald*, which became popular at once. Encouraged by his success, he, in the following year, pub. his *Scottish Pastorals, Poems, and Songs*. In 1802 he met Scott, and not long after became friendly with Allan Cunningham. His next pub. was *The Mountain Bard* (1807), and in 1810 he issued *The Forest Minstrel*, which was not a financial success. Three years later appeared the admirable work, *The Queen's Wake*, and in 1816 *Madoc of the Moor*. In that year he also brought out *The Poetic Mirror, or The Living Burds of Great Britain*, a vol. of parodies of the leading poets of the day, including Scott, Coleridge, Southey, Byron, and Wordsworth. Among his subsequent books are: *The Browne of Rodsbeck, and other Tales* (1817), *The Jacobite Relics of Scotland* (1819), *Winter Evening Tales* (1820), *The Private Memoirs and Confessions of a Justified Sinner* (a work of genius, anticipating the psychological 'thrillers' of the twentieth century, anonymously, 1821), and *Queen Hymie* (a poem, 1826). He contributed to *Blackwood's Magazine* many articles, some of which he collected in 1829 under the title of the *Shepherd's Calendar*, and in 1831, to the great annoyance of Lockhart, he printed *The Domestic Manners and Private Life of Sir Walter Scott*, a book that is now too seldom read. He has been described as the greatest poet after Burns, that has ever sprung from the common people, and it is certain that he attained to very great heights when dealing with local or legendary stories, while his gift of imagination was so great as lightly to be entitled genius. Much of his work was mediocre, but he had in a great degree the lyrical gift, and his poems, *When the Kye come Home* and *Flora MacDonald's Farewell* are exquisite. He wrote his *Autobiography*. See Mrs. Gordon, *Memoirs of James Hogg*, 1885; H. T. Stephenson, *The Ettrick Shepherd: a Biography*, 1922; E. O. Batho, *The Ettrick Shepherd*, 1927.

Hogg, Quintin (1845-1903), Eng. phil-anthropologist, seventh son of Sir James Weir H., b. in London. He was educated at preparatory schools and Eton, which he left in 1863 and entered business, being first with a firm of tea merchants and later with sugar merchants. Philanthropy, however, was the main concern of H.'s life, and in 1864 he started a ragged school for boys. In 1881 he purchased the Royal Polytechnic Institution in Regent Street for providing young men and women of the lower middle classes with instruction, recreation, and social intercourse, and thus successfully initiated the polytechnic movement in London.

Hogget, see under FIG.

Hogland, small is. situated in the gulf of Finland, 110 m. W. of Leningrad. In 1788 a battle took place here between the Russians and the Swedes. There are extensive quarries of granite and porphyry. It has an area of about 11 sq. m. Pop. 800.

Hogmanay, name applied in Scotland and a few parts of England to the last day of the year, viz. Dec. 31. It is also used for the cake given to the children who beg for gifts on the morning of that day. It marks the beginning of New Year holiday festivities in Scotland.

Hognose, N., Amer. colubrine snake (genus *Heterodon*) with a flattened head and a snout like a hog's. It is not poisonous.

Hog's Back, range of chalk hills, 600 ft. high, which extends from Guildford to Farnham, Surrey, England. It is traversed by an old coach road which affords a splendid view of the surrounding country.

Hogshead, liquid measure of capacity, varying with the nature of the contents, but equivalent for wine to sixty-three gallons, and for ale and beer to fifty-four gallons. In England it has now fallen into disuse, but the measure still obtains in the United States, and is equivalent to sixty-three Amer. gallons. The etymology of the word has been much discussed and its origin is uncertain.

Hogue, or Hougue, La, roadstead on the E. side of the N. part of Goutin Peninsula, France, dept. Manche, off a rocky and dangerous coast. Gives its name to the naval victory of the Eng. and Dutch over the Fr. in 1692.

Hohenelbe (Vrchlabi), tn. in Czechoslovakia on the Elbe, 17 m. N.E. of Gitschin. It is engaged in various branches of manuf., principally the textile industry. Pop. 22,000.

Hohenfriedberg (Polish Dobromierz), tn. in Silesia, 3 m. W.S.W. of Wrocław (Breslau) Poland. Noted for Frederick the Great's victory over the Austrians and Saxons in 1745. Pop. 2000.

Hohenheim, Philippus Aureolus Theophrastus Bombastus von, see PARACELSUS. Hohenheim, vil. in Württemberg-Baden, Germany, 7 m. S. of Stuttgart. A royal castle, built in 1785, is situated in the neighbourhood; this was, later, used as an agric. academy with botanical gardens. The succoees on the staircase are by Isopi.

**Hohenlimburg**, tn. of Westphalia, Germany, situated on the R. Lenne, 5 m. E. of Hagen. It is the seat of an iron industry and has textile manufs. Pop. 4000.

**Hohenlinden**, vil. in Upper Bavaria, Germany, 20 m. E. of Munich, Germany, celebrated for the victory gained there over the Austrians, by the Fr. and Bavarians under Moreau in 1800. The battle is described in Campbell's lyric of the name. Pop. 970.

**Hohenlohe**, former principality of Germany in Franconia, now comprised chiefly in Württemberg and Bavaria.

**Hohenlohe-Schillingsfürst**, Chlodwig Karl Viktor, Prince of (1819-1901), Ger. statesman, b. at Ragaz. Was appointed chief minister of Bavaria in 1866, and endeavored to bring about the union of S. and N. Germany, but was forced to resign. During the Franco-Ger. war he advocated the alliance between Bavaria and Prussia. In 1873 he was appointed, by Bismarck, Ger. ambas. in Paris, and in 1885 became governor of Alsace-Lorraine; he was imperial chancellor in 1894, and led the active Ger. colonial policy. He resigned in 1900. See J. Ziekursch, *Politische Geschichte des neuen deutschen Kaiserreichs*, 1930.

**Hohensalza** (Polish Jnowroclaw), tn. in the prov. of Poznan, 66 m. E.N.E. of Poznan. Until 1905 known as Jung-Breslau. Salt works and saline springs are in the vicinity, and there is a sugar-beet industry. Pop. 34,100.

**Hohenstaufen**, Ger. princely house, members of which were emperors or Ger. kings from 1138 to 1254. The earliest known member of the family was Frederick von Buren, who d. at the end of the eleventh century. His son, Frederick, built a castle at Staufen or H., and called himself by this name. He was a supporter of the Emperor Henry IV, who gave him the duchy of Swabia, and when Henry was absent in Italy acted as viceroy. In 1105 he was succeeded by his son Frederick II, the one-eyed, who, together with his brother Conrad, held S.W. Germany for their uncle, the Emperor Henry V. On the death of Henry in 1125, his estates fell to Frederick, but Lothair the Saxon being chosen emperor, a furious war broke out which ended in the submission of Frederick. In 1138 Conrad was elected emperor of Germany as Conrad III., and was succeeded by his nephew, Frederick Barbarossa, in 1152. Other emperors of this family were Henry VI. (1190-97), Philip I. (1198-1208), Frederick II. (1212-1250) and Conrad IV. (1250-54), the male line becoming extinct in 1268, when Conradin was put to death in Italy by Charles of Anjou. See HOLY ROMAN EMPIRE. See F. W. Schirrmacher, *Die letzten Hohenstaufen*, 1871. J. Bühler, *Die Hohenstaufen*, 1925.

**Hohenstein-Ernstthal**, tn. in Saxony, Germany, 12 m. N.E. of Zwickau. Textile manufs. and knitting are the chief industries. Pop. 17,500.

**Hohenzollern**, Ger. imperial dynasty, which traced its origin back to the ninth century to one Count Tassilo, who built

the castle of H. at Zollern in Swabia. A descendant of his, Frederick III., married Sophia, daughter of Conrad, burgrave of Nuremberg, succeeding his father-in-law as burgrave about 1192. When he d. about 1202 his sons Conrad and Frederick succeeded him, Conrad becoming burgrave of Nuremberg and founding the Franconian branch of the family, while Frederick received the co. of Zollern, and became the ancestor of the Swabian branch. On the death of Conrad, his son Burgrave Frederick III. was the representative of the Franconian branch, and he took a prominent part in Ger. affairs, securing the election of Rudolph of Hapsburg as Ger. king in 1273. In 1415 Burgrave Frederick, the son of Frederick V., received Brandenburg from King Sigismund, becoming margrave of Brandenburg as Frederick I., and in 1701 the elector of Brandenburg, Frederick III., became king of Prussia. (A learned survey of the H. dynasty in the eighteenth century is to be found in the introductory part of Carlyle's *Frederick the Great*.) In 1871 Wm., the seventh king, took the title of Ger. Emperor. The Swabian line was divided in 1576 into the branches of Hechingen and Sigmaringen. These continued unbroken until 1849, when they fell into the hands of Prussia. The proposal to raise Prince Leopold of Hohenzollern-Sigmaringen (1835-1905) to the Sp. throne in 1870 was the immediate cause of the war between Germany and France. Prince Charles of H.-Sigmaringen became king of Rumania in 1881. The Hs. reached the acme of their power after the estab. of the united Ger. Empire following Bismarck's wars of 1864, 1866, and 1870-71. The H. king of Prussia was thenceforth the Ger. Emperor, and Prussian traditions became the accepted order of things in place of the old cultural and cosmopolitan life of S. and Central Germany. The spirit of the house of H. sought its expression in militarist ambition, and its leading figure was the Kaiser, Wm. II., who aimed at world domination in the First World War, through the conception of *Mittel Europa*. After the military collapse of Germany in 1918, Wilhelm II. (d. 1941) fled to Holland and the H. dynasty came to an end. But the house of H. still hoped to return to the throne throughout the duration of the post-war Ger. republic and even subsequently, in spite of the opposition of the Nazis to the restoration of the monarchy. Potential candidates were the ex-Crown Prince Wilhelm and his second son, Louis Ferdinand. His elder son, Friedrich Wilhelm, was killed in Flanders in June, 1940, but, in any case, had forfeited his claim by marrying a woman of unequal birth.

See E. Berner, *Quellen und Untersuchungen zur Geschichte des Hauses Hohenzollerns*, 1901-11; J. Höffner, *Die Hohenzollern und das Reich*, 1918.

**Hohenzollern**, two united principalities of S. Germany. The modern Prussian prov. was formed in 1850, when H.-Sigmaringen and H.-Hechingen were united. It consisted of a narrow strip of



land bounded on the S.W. by Baden and on all other sides by Württemberg. Its area being 441 sq. m., and pop. of 78,000. The surface is mountainous, and the chief industries are agriculture and cattle-rearing. Iron, coal, gypsum, and salt are found, and there are also some mineral springs. The castle of H. was destroyed in 1423, but has been restored sev. times, the present one being built by King Frederick Wm. IV. H. is now included in the Land of Württemberg.

**Hohenzollern Redoubt**, very strong tactical point in the Ger. line during the First World War, situated just S.W. of La Basée. During the battle of Loos in the autumn of 1915 the Brit. operations included the attack against the H. Redoubt. Fighting here was of the most desperate nature and lasted from Sept. 27 to Oct. 13. At the first onslaught the Brit. gained it, but Ger. counter-attacks, carried out with great fury, were at once launched against it incessantly, and a see-saw situation ensued into the first week of Oct. The fiercest fighting raged round the trenches named 'Big Willie' and 'Little Willie,' in allusion to the ex-Kaiser and his son the ex-Crown Prince. On Oct. 3 the Ger. regained most of the position and on the 8th they launched an attack against both Brit. and Fr., which was repulsed heavily. A final Brit. assault was made by a div. of Territorial on Oct. 13, which at certain places carried the line beyond the redoubt. In this action the Territorial Battalions of the Sherwood Foresters gained great distinction, and Capt. C. Vickers of that regiment earned the Victoria Cross. Despite the great exertions of the Allies, the results of this offensive were far from satisfactory, as the Brit. alone had 50,000 casualties and reaped but small advantages.

**Holists**, see **LIFT**.

**Hokiang**, prov. of Manchuria, China, situated at the confluence of the Rs. Sungari, Ussuri, and Heilungkiang. It lies in a low, marshy plain, thus having great difficulty in cultivation and drainage. It consists of 19 cos. with Kiamusze as cap. Area 47,700 sq. m., pop. 1,936,000.

**Hokitika**, tn. in New Zealand, South Is., cap. of Westland co., on the N.W. coast about 24 m. S. of Greymouth. It is noted for its goldfields, but brewing and tanning are also carried on, and there are saw-mills and door factories. Greymouth is the port for the goldfields. Earthquakes are frequent. Pop. 3000.

**Hokkaido (Yezo) (Hoku, north, kai, sea, and do, road)**, N. Is. of Japan, separated in the N. from Sakhalin Is. by the La Perouse Strait and on the S. from Honshu by the Tsugaru Strait. Area 30,148 sq. m.

**Hokusai**, Katsuhika (Nakajima Tetsujiro) (1760-1849), Jap. painter, book-illustrator and teacher of drawing, b. at Tokyo of a family of artists. Practised early as a wood-engraver; then studied with Shunsho, a well-known designer and painter of colour prints; but he had to leave the studio because of his independent views on style, H. leaning to the classical Kano manner. H. became not only the leading representative of the

Ukiyo-ye or popular school but an artist of world-wide repute. His knowledge of technique and his draughtsmanship were alike extraordinary and his drawings and colour prints had considerable influence on art in foreign countries. His qualities are shown to great advantage in his 'River Bridge,' which strongly influenced Whistler's interpretation of moonlight effects. He devoted himself for the most part to the illustration of books or series and to industrial art as well as the teaching of drawing. His very many works include, particularly, the *Manga* or *Ten Thousand Sketches*, a pictorial encyclopaedia of all aspects of Japanese life (in 15 vols.; last pub. in 1836); and the *Hundred Views of Mount Fuji* (1835) (3 vols. in monochrome). His colour prints *Thirty Six Views of Fujiyama* prove him a master of colour, his combination of greens, blues and yellows being a striking innovation. Other notable works are 'The Wave' (Sir Edmund Walker Allerton, Royal Ontario Museum), 'Views of Famous Bridges,' 'Waterfalls,' 'Views of Lu-chu Islands.' See works on Hokusai by M. Revon, 1896; E. de Goncourt, 1896; C. J. Holmes, 2nd ed., 1900; F. Perzyski, 1904; E. F. Strange, 1906; also N. Brown, *Block Printing and Book Illustration in Japan*, 1924.

**Holacanthus**, name of a genus of teleostean fishes belonging to the family Chetodontidae. The species are marine and carnivorous, and are particularly abundant near volcanic rocks and coral is. They are remarkable for their beautiful colouring, *H. imperator*, a native of the E. Indies, being deep blue with bands of orange. The flesh is highly esteemed as diet.

**Holbach**, Paul Henri Thyry, Baron d' (1723-89), Fr. philosopher, b. at Kidesheim in the Palatinate. He spent most of his time in Paris, and, having great wealth and being of hospitable disposition, entertained and was intimate with the most distinguished men of his day, among them, Diderot, Grimm, Hume, Gericke, Wilkes, Sterne, Rousseau. He wrote a large number of articles on chemistry and mineralogy for the *Encyclopédie*, and in 1767 pub. his *Christianisme dévoilé*, in which he attacks Christianity and religion. In 1770 his famous book, *Le Système de la Nature*, appeared, and in it he denied the existence of the Deity and asserted that happiness is the end of mankind. The book evoked much criticism, and was answered by Frederick the Great and Voltaire. In philosophy H. was a follower of Diderot and his portrait appears in the character of the virtuous atheist Wolmar of the *Nouvelle Héloïse* of Rousseau.

**Holbeach**, very ant. mkt. tn., Lincolnshire, England, 8 m. E. of Spalding. It was once on the shore of the Wash, but is now 6 m. inland. H. is the bp. of the antiquary, Wm. Stukeley. Pop. 6100.

**Holbein**, Hans (c. 1465-1524), the Elder, Ger. painter, was a native of Augsburg. His early works bear the impress of the schools of Van der Weyden and Memling, while his later pieces, e.g. the basilica of St. Paul (1502) in the gallery of Augsburg,

show Flemish influence. He was a prolific artist, and devoted his energy mainly to religious subjects, his crowning work being the altar piece of St Sebastian in Munich with the picture of the Annunciation, and the graceful figures of St Barbara and St Elizabeth on the wings. See monograph by C. Glaser, 1908.

Holbein, Hans (1497-1543), the younger great German painter, b. at Augsburg. Little is known of his early years, but in 1515 he went to Basel with his brother Ambrosius, and while there drew illustrations for Erasmus's *Praise of Folly*, which were as popular as the work itself. Besides this he painted the portraits of the burgomaster, Jacob Meyer, and his wife, and the exquisite skill of the artist is shown in the elaboration of every detail in the rich embroidery of the latter's attire. In 1517 he was in Lucerne, and was employed by the mayor of Lucerne to decorate his house with wall paintings, but he soon returned to Basel, and executed in 1519 the portrait of Bonifacius Amerbach, which is one of the most perfect of his works. Here, too, he was greatly occupied with mural decoration, his celebrated 'Peasants' Dance' being a wall painting on a house at the corner of the *Küesengasse*. He also decorated the town hall, and executed many original designs for glass paintings, as well as for woodcuts, among which his book entitled the *Dance of Death* is the most famous



THE ABHOR AND DEATH  
From 'The Dance of Death'

This series is most original, and represents every class of humanity terrified by Death. He also designed a title page for More's *Utopia*, as well as for Luther's German translation of the N.T. Of his sacred pictures the most celebrated perhaps are the 'Solothurn Madonna' and the 'Meyer

Madonna'. The former was only discovered in the middle of the nineteenth century. But marvellous as his paintings were, his fame in his own day rested on his portraits, and among these his portrait of Erasmus at Longford Castle is worthy of mention, as well as his portrait of himself, both of which were executed before his visit to England. In 1527 he came to London, and was introduced to Sir Thomas More, whose portrait he painted as well as that of Warham archbishop of Canterbury, and Bishop Fisher, besides eighty-seven portraits on tinted paper in Windsor Castle. In 1528 he produced 'The Family of Sir Thomas More,' a group of portraits which has unfortunately been lost, and on his return to Basel painted a lifelike picture of his own family, which is now in the Museum of that town. In 1531 he was again in London, and executed portraits of the German chancellor of the Steelyard, the most valuable of which is that of Jörg Gyze (Kühn), much praised by Ruskin. In 1533 he painted 'The Ambassadors.' Soon after this he came under the notice of Henry VIII., and painted for him the picture containing Henry VII., Henry VIII., Jane Seymour, and Elizabeth of York. This masterpiece, noticed by van Mander, and mentioned in the account of the duke of Saxony's visit to England in 1613, was destroyed by fire in 1698. Besides this he painted a portrait of Jane Seymour, now in Vienna, and one of Moret in the Dresden Gallery. He also executed designs for ornament, his drawing for the 'Jane Seymour Cup,' in the Bodleian Library at Oxford being perhaps the most beautiful example of this class of art in the world. In 1537, on the death of Jane Seymour, he went to Brussels to paint the young duchess of Milan, a proposed candidate for the king's hand (National Gallery), and in 1539 to Cleves to paint the Princess Anna (Louvre). Among other portraits of this period may be mentioned that of the duke of Norfolk, Martin Luther, Prince Edward, and another portrait of himself. The importance of Hans Holbein's work cannot be over-estimated before his time portrait painting was scarcely known and it was he who first raised the art of painting to perfection in England; indeed, it may be questioned whether in many of the finest requirements of portraiture his work has ever been surpassed. See R. N. Wornum, *Some Account of the Life and Works of Hans Holbein* 1967; A. Voltmann, *Holbein und seine Zeit*, 1971-76; J. Cundall, *Hans Holbein*, 1879; A. M. Brooks, *From Holbein to Wölfflin*; *Notes on Drawings*, 1920; U. Christoffel, *Hans Holbein*, 1926; A. Chamberlain, *The Art of Holbein* 1940; H. Koegler, *Die Bilder zum Gibelbuch Hortulus Animae*, 1943; Holberg, Ludwig, *Baron* (1684-1754), creator of modern Danish literature, b. at Bergen in Norway. He was educated at Bergen and at the university of Copenhagen. In 1704 he came to England and spent two years amongst the libraries at Oxford, and in 1711 printed his first work, *An Introduction to the History of the Nations*

of Europe. Soon after this he received the Rosenkrantz grant, the holder of which was expected to travel, and spent the years 1711, 1715, and 1716 visiting the various countries of Europe. On his return to Denmark he pub. his *Introduction to Natural and Popular Law*, and in 1718 became prof. of metaphysics at Copenhagen. In 1720 he was promoted to the chair of public eloquence, and in 1730 to that of hist., becoming quæstor of the univ. in 1737, and a baron in 1747. Up to about 1716 his writings had been concerned with law and hist., but after that date he began a new class of humorous literature, and his *Pædar Paars* (1719), the earliest of the classics of the Dan. language, is a satire of the pedantic stiffness and stupidity of contemporary life and thought. In 1721 the first Dan. theatre was opened at Copenhagen, and Holberg produced in 1722 a Dan. trans. of *L'Avare* (before this no plays had been acted in Denmark except in Fr. and Ger.). This was followed by numerous original comedies between 1722 and 1728, amongst which may be mentioned *Den Vegelesindede*; *Jean de France*; *Jeppe paa Bjerget*; *Gert the Westphalian*; *Den politiske Kandestøber*; and *Henrik and Pernille*, his most famous piece (produced in 1724). After the closing of the theatre he turned his attention to historical and philosophical writings, and produced in 1726 *Metamorphosis*, a poetical satire; *Epistolæ ad virum perillustrem* (1727); *Description of Denmark and Norway* (1729); *History of Denmark* (1732-35); *Description of Bergen* (1737); *Universal Church History* (1738); *Biographies of Famous Men* (1739-1745); *Moral Reflections* (before 1744); *A History of the Jews*. In 1741 appeared another classic in his famous poem, *Niels Klim's Subterranean Journey* and from 1743-51 *Epistles*, his last pub. work. He also wrote his *Autobiography*, which, together with *Pædar Paars* and the *Subterranean Journey*, has been trans. into Eng. The importance of H. cannot be overestimated. He was the first writer in Europe of his time (outrivving Voltaire), surpassing both Pope and Swift in genius, and created a literature for a country up to his time without books; indeed it is said that before H. went to Denmark the Dan. language was seldom heard in polite society. See G. Brandes, *Ludvig Holberg et Fæstskrift*, 1881.

**Holborn**, metropolitan bor. of London, bounded on the N. by St. Pancras and Finsbury, on the S.E. by the city of London, and on the S. and W. by the city of Westminster. 'Holebourne' means the stream in the hollow and alludes to the H. Fleet, over which a bridge was built in early times, now replaced by the Viaduct, built in 1869. H. contains some interesting buildings, among which may be mentioned the chapel of St. Etheldreda in Ely Place (so called from the bishops of Ely who held land here as early as the thirteenth century); the par. church of St. Giles in the Fields dating from 1734, originally the site of a leper's hospital founded by Matilda in 1101; the church of St. Andrew built by Wren in 1686

(burnt out in 1941), which numbers Sacheverell among its rectors; Lincoln's Inn, with its Tudor gateway, upon which Ben Jonson is said to have worked as a bricklayer; Gray's Inn, with its fourteenth-century chapel (a great part of which Inn of Court was destroyed in air raids); the half-timbered houses of Staple Inn and the Brit. Museum. H. has an area of 406 acres and a pop. of 22,400.

**Holbrook**, Norman Douglas (b. 1888), Eng. naval officer; b. at Southsea; son of Col. Sir Arthur R. Holbrook. When in command of submarine *B.11*, on Dec. 31, 1914, he dived under five rows of mines in the Dardanelles and torpedoed the *Messoudieh*, a Turkish battleship. Although fired on and pursued by anti-submarine craft he regained the parent ship without mishap. This, however, necessitated being submerged for nine consecutive hrs. The first news the crew received on joining the parent ship was the official Turkish confirmation of the sinking of the *Messoudieh*. For this exploit he was awarded the Victoria Cross.

**Holbrooke**, Josef Charles (b. 1878), Eng. composer, b. at Croydon, son of a Bristol musician. His orchestral works include *The Raven* (1900), *Queen Mab* (1904), *The Bells* (1906), *Apollo and the Seaman* (1908). His operas include a Brit. legend trilogy: *Children of Don* (1912), *Dylan* (1914), and *Bronwen* (1916), under the general title, *The Cauldron of Awenyn*, with libretti by T. E. Ellis (pen-name of Lord Howard de Walden).

**Holcroft**, Thomas (1745-1809), dramatist and author, b. in London. He was successively stable-boy, shoemaker, tutor, and actor. In 1780 he pub. his first novel, *Alwyn, or the Gentleman Comedian*, in which he describes his own experience as a strolling actor. In 1781 his first comedy, *Duplicity*, appeared, and in 1783 he visited Paris as correspondent of the *Morning Herald*. He trans. *Marriage de Figaro* from memory, and produced it at Covent Garden in 1784, himself playing the title-role. In 1792 *The Road to Ruin*, his best and most successful play, appeared, and in 1802 his musical adaptation *A Tale of Mystery*, was acted at Covent Garden. H. pub. numerous comedies and comic operas, besides novels and trans. also *Human Happiness* (a poem). He was praised by Lamb, and was intimate with Wm. Godwin and Hazlitt, who ed. his *Memoirs* (1816).

**Holda**, Goddess of Teutonic mythology. Represented as a kindly goddess, figuring prominently in fairy lore. Regarded as the goddess of spinning and agriculture and often depicted as making her bed when it snows, the fakes bring the bed-faithers flying about.

**Holden**, Sir Isaac (1807-87), inventor, b. at Hurlst, near Paisley. After working in a cotton-mill, he became a mathematical teacher and it was then that the idea occurred to him of applying sulphur to the explosive material that was necessary to produce instantaneous light. In 1830 he became book-keeper in the firm of Townsend Brothers, worsted

manufacturers, but he soon left the counting-house for the mill, and conceived the application of machine power to the various operations of wool-combing. In 1846 he became associated with Lister, and with him brought out a patent for a new method of carding and combing and preparing genappe yarns. In 1848 he opened a large fabrique at St. Denis, and in 1864 concentrated his business at Bradford, which soon became the largest wool-combing concern in the world.

**Holdenby House**, see under HOLMBY.

**Hölderlin, Johann Christian Friedrich** (1770-1843), Ger. poet, b. at Lauffen on the Neckar in Württemberg. Son of the chamberlain to a monastery, he became an orphan at an early age, and was a contemporary of Hegel and Schelling at Tübingen Univ. Became a tutor and a private coach at Jena, Frankfurt-on-Main and Homburg. In 1801 he took up a teaching appointment at Bordeaux. In 1802 he became mentally deranged and was in an asylum at Nürtingen. Discharged in 1804 he became a librarian at Homburg but in 1806 was admitted to the Tübingen asylum. For the rest of his life he suffered from severe melancholia with brief intervals of normality. In his early years was much under the influence of Klopstock and Schiller, for whose *Neuer Thalia* he wrote the first fragments of his great novel *Hyperion*. He was also a friend of the philosopher Fichte. An enthusiast for the ideals of classical Greece as they were then understood, he translates the *Antigone* and the *Oedipus Rex* (1804) of Sophocles and wrote a fragment of a tragedy entitled *Empedokles*. Apart from the idealistic novel *Hyperion* (1793-99) he wrote lyric poetry which is melodious, rich in imagery, and of great verbal dexterity, often on classical models in Gk. metres. His collected poems were pub. in 1826, and his complete works in 1846. See W. Dilthey, *Das Erlebnis und die Dichtung*, 1906 and 1939; F. Zinkernagel, *Entstehungsgeschichte von Hölderlins Hyperion* 1907; Fr. Gundolf, *Hölderlins Archipelagus*, 1911; C. Victor, *Die Briefe der Helmina*, 1921; *Die Lyrik Hölderlins*, 1921; M. Montgomery, *Hölderlin and the German Neo-Hellenic Movement*, 1923; S. Zweig, *Der Kampf mit dem Dämon*, 1925; W. Boehm, *Hölderlin als Verfasser des Ältesten Systemprogrammes des deutschen Idealismus*, 1926; J. Hoffmeister, *Hölderlin und die Philosophie*, 1942.

**Holderness**, flat and fertile dist. of the E. Riding of Yorkshire, England, between the N. Sea and the estuary of the Humber. A parl. div. of 216,551 acs. Pop. 19,500.

**Holdich, Sir Thomas Hungerford** (1843-1929), Eng. explorer; b. Feb. 13 at Dingley, Northants. Entered Royal Engineers, 1862. Afghan war, 1878-80. Supt. Indian frontiers survey, 1892-98. In 1899, one of three Brit. commissioners on boundary of Chile and Argentina: made survey for King's award, 1902. Pubs.: *The Indian Borderland* (1901), *India* (1904), *The Countries of the King's Award* (1904), *Tibet the Mysterious* (1906), *The Gates of India* (1909).

**Holding**, in Scots feudal law, denotes the tenure subsisting between the feu superior and his vassal. A feu-farm H. is one by the terms of which the vassal had to pay the superior a yearly rent in money or in corn. A blench H. is one under which the vassal pays a nominal yearly duty, e.g. a rose, a pair of gilt spurs, the object being merely to acknowledge the superiority. A burghage H. is that by which burghs-royal hold lands of the sovereign specified in their charters of erection (see BURGH). A H. by a church, monastery, or other religious or charitable society is called a mortification (cf. Eng. Mortmain or H. 'in the dead hand'). See J. Erskine, *Principles of the Law of Scotland*, 1895.

**Holdsworth, Sir William** (1871-1943), Eng. jurist, educated at Dulwich and at New College, Oxford, where he lectured on law from 1895-97. Elected Fellow at St. John's, Oxford, 1897, and taught law there for twenty years. Elected Vinerian Prof. of Eng. Law at Oxford, 1922, being in many ways the most distinguished occupant of the chair since Blackstone. From 1903-1908 he was also Prof. of Constitutional Law at University College, London and in 1910 he was appointed All Souls Reader in Eng. Law. At Oxford he wrote the first three vols. of his work *A History of English Law*, which gave him a world-wide reputation. As Vinerian Prof. he brought out a new ed. of his hist., the first 3 vols., appearing in 1922, the ninth in 1926. Meanwhile he had written *Sources and Literature of English Law*, *An Historical Introduction to Land Law* (a lucid elementary book on a difficult subject), and many articles in legal periodicals, Eng. and Amer. His works, *The Historians of Anglo-American Law* (1927), *Some Lessons from our Legal History* (1928), and *Charles Dickens as a Legal Historian* (1928), were the outcome of his lectures in America in 1927. On his return from America he was appointed a member of the Indian States Inquiry Committee, constituted to help the Simon Commission, and in 1928 he went out to India.

From 1930 to 1932 he sat as a member of the Ministers' Power Committee. In 1937 he pub. three more vols. dealing with the public law, the enacted law, and the professional development of the law in the eighteenth century. In 1934 he was awarded the Swiney Prize of the Royal Soc. of Arts, and in 1938 he went out to India again, this time as Tagore Prof. at Calcutta: the result was the pub. of *Some Makers of English Law* (1938). Made a member of the Order of Merit, 1943. His hist. is a great monument of learning, industry and good sense, and in it he digested and harmonised all the results of the latest Eng., Fr. and Amer. research: and the immense amount of detail in the vols. never obscures his good judgment or perspective nor blinds him to general tendencies.

**Holguin**, tn. in Oriente prov., Cuba; in a healthy, hilly region, 60 m. N.W. of Santiago de Cuba. Sugar and tobacco centre. Pop. 135,000.

**Holiday Fellowship (Ltd.)**, The, venture in social service founded in 1913 by T. Arthur Leonard (q.v.), whose objects are to provide for the healthy enjoyment of leisure; to encourage love of the open air; to promote social and international friendship; and to organise holiday making and other activities with these objects. Starting with two Guest Houses—one in North Wales and the other in the Lake District—it developed steadily, and by the summer of 1939 was providing more than 90 guest houses, walking tours, and other forms of community holiday in various parts of this country and abroad. Activities on the Continent took parties of guests into various countries where special endeavour was made to establish contact with the inhabs. of the places visited, and people from other countries were welcomed at Fellowship Centres in this country, both as guests and as members of the staff. A principal feature of Fellowship holidays is the daily excursion, under competent leadership, so organised as to introduce guests as fully as possible both to the beauties and to the historical, literary, and other interests of the dist. Tramping on mountain, moorland, and footpath is particularly encouraged. Members of the Fellowship have also organised, in various parts of the country, some 80 rambling and social clubs, under the title of 'Local Groups.' For legal and business purposes, the H. F. is registered under the Industrial and Provident Societies Act, 1893, with registered office at 142 Great North Way, Hendon, London, N.W. 4. The capital required for its operations is subscribed in the form of £1 shares, the holding of one or more of which, up to a maximum of ten, constitutes membership of the organisation. The work of the organisation is controlled by a General Committee, elected by the shareholding members.

A kindred organisation to the H. F. is the Co-operative Holidays Association, Fallowfield, Manchester.

**Holidays**, see BANK HOLIDAYS.  
**Holinshed (or Hollingshead), Raphael** (c. 1520–80), chronicler, is said to have been a native of Cheshire. He came to London early in Elizabeth's reign, and was employed as translator in Wm. Wolfe's printing-office, rendering great assistance to Wolfe in the compilation of his *Universal History*; indeed H. wrote most of the description of the Brit. Isles. Wolfe, however, died before the work was completed, and it was consequently abridged, and appeared in 1578 as the *Chronicles of England, Scotland, and Ireland*. A second enlarged ed. was pub. in 1587, but did not meet with the approval of Queen Elizabeth, and in 1808 a reprint of the original was pub. in six vols. The *Chronicles* are valuable for their historical information, and are interesting as being the source from which the Elizabethan dramatists drew their plots. Indeed, nearly all Shakespeare's historical plays, as well as *Macbeth*, *King Lear*, and *Cymbeline* are based on H.'s work.

**Holism** (from the Gk. *śōs*, whole) name given to the philosophy which holds that

there is a fundamental factor operating in the universe towards the creation of wholes. H. embraces biology, psychology and physics, and claims to be necessary to the proper understanding of evolution. H. is something akin to the naturalistic conception of physical science, but that from beginning in realism it ends in idealism. See J. O. Smuts, *Holism and Evolution*, 1926.

**Holkham**, vill. of Norfolk, England, near the N. coast, 2 m. from Wells. It is famous for its hall, seat of the earl of Leicester, built in the eighteenth century in the Palladian style. The estate was bought in 1659 by John Coke, son of Sir Edward Coke, and here the earl of Leicester, known as Coke of Norfolk, carried out experiments of great benefit to agriculture.

**Holl, Francis Montague** (1845–88), Eng. portrait painter, b. in London. He became a student at the Royal Academy schools in 1861, and first exhibited in 1864. After this date he was a regular contributor to the Royal Academy, but he did not begin portrait-painting until 1876, when he undertook a portrait of Mr. G. C. Richardson. This picture was exhibited in 1878. Among his best portraits are the Prince of Wales, the duke of Cambridge, Sir George Stephen, and Mr. W. E. Gladstone. R.A. 1883.

**Holl, Karl** (1866–1926), Ger. theologian and church-historian; b. at Tübingen. Assistant in Berlin Academy of Sciences, 1891; lecturer, univ. of Berlin, 1896. Prof.: Tübingen, 1900; Berlin, 1906. Rector of Berlin Univ. 1925. His *Gesammelte Aufsätze zur Kirchengeschichte* (1927–28) contains a remarkable study of Luther.



HENRY FOX, FIRST BARON  
HOLLAND

**Holland, Henry Fox, first Baron** (1705–1774), Eng. statesman; after a riotous youth entered Parliament in 1738. In 1743 he became a lord of the Treasury, and three years later was promoted to the office of secretary-at-war, in which position he.

remained until 1755, when he was appointed secretary of state. He resigned in the following year, but in 1757 became Paymaster-General of the Forces, and in this lucrative office he amassed a vast fortune, by methods, it is said, not the most scrupulous. He took no active part in politics after 1763, when he was created a peer.

Holland, Henry Richard Vassall Fox, third Baron (1773-1840), Eng. statesman, b. at Winterslow House, Wiltshire, only son of Stephen, second Lord H., and of Mary Fitzpatrick daughter of John, Earl of Upper Ossory. He was brought up by his maternal grandfather, and uncle, Charles James F., to whom he was indebted for his love of classical literature, also his strong Whig principles. He was educated at Eton and at Christ College, Oxford. After doing the *grand tour*, he returned to England in 1796; took his seat in the House of Lords, and made his maiden speech in the debate on the question of the Assessed Taxes Bill. He pub. *Life and Writings of Lope Felix de Vega Carpio* (1806), and *Three Comedies from the Spanish* (1807). In 1814 he visited Murat at Naples, and in 1816 strongly opposed the Bill for the detention of Napoleon as a prisoner of war. In 1830 he was chancellor of the duchy of Lancaster, which post with two short intervals, he held until his death. He wrote *Foreign Reminiscences*, and *Mem. of the Whig Party during my Time*, both ed. by his son, Henry Edward, fourth Lord Holland. See T. Macaulay, *Essay on Lord Holland*, 1848.

Holland, Sir Henry Scott (1788-1873), Eng. physician and writer, b. at Knutsford, Cheshire. He was appointed physician-in-ordinary to the Prince Consort in 1840, and to Queen Victoria in 1852. His pub. include: *Travels in Albania* (1815), *Medical Notes and Reflections* (1839), *Chapters on Mental Physiology* (1852), and *Recollections of Past Life* (1871).

Holland, Henry Scott (1847-1915), clergyman of the Church of England. Educated at Eton and Balliol College, Oxford. Took holy orders in 1872; Canon of Truro, 1882-4; of St. Paul's, 1884-1910; of Christ Church from 1910, and at the same time Regius prof. of divinity at Oxford. Editor of the *Commonwealth*. His pub. include: *Logic and Life* (1882), *Creed and Character* (1887), *Personal Studies* (1905), *Vital Values* (1906), and *Fibres of Faith* (1910).

Holland, Philemon (1552-1637), called 'the translator-general of his age,' b. at Chelmsford, Essex. Having obtained his M.D. degree at Cambridge (1591), he practised medicine at Coventry, and became headmaster of the Free School there (1628). His fame rests on his trans. of Pliny's *Natural History* (1601), Plutarch's *Morals* (1603), Xenophon's *Cyropaedia* (1632) and other classical works. He also pub. an Eng. version of Camden's *Britannia* (1610).

Holland, Sir Thomas Erskine (1835-1926), Eng. jurist, b. at Brighton; son of Rev. Thomas Agar H., rector of Poyning, Sussex. Educated at Balliol and

Magdalen colleges, Oxford. In 1874 he was appointed Vinerian reader in Eng. law, and prof. of international law and diplomacy at Oxford. He sat on the Royal Commission of 1903-05 to inquire into the supply of food in time of war, and was sent as plenipotentiary to the Geneva Conference of 1906. His pub. include: *Elements of Jurisprudence* (1880), *Institutes of Justinian* (1873-81), *Studies in International Law* (1898), *Laws of War on Land* (1908), *Proposed Changes in the Law of Prize* (1911), and *Zouche's Jus Feudale* (1911). Knighted 1917.

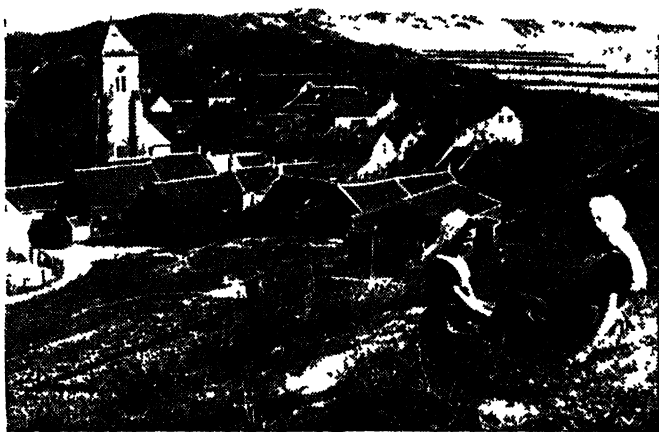
Holland, or The Netherlands (the name 'Holland,' properly speaking, covers only two of the provs.), kingdom with a long coast-line lying between 50° 43' and 53° 36' N. lat., and 3° 22' and 7° 16' E. long. It is bounded on the N. and W. by the N. Sea, on the S. by Belgium, and on the E. by Germany. Its greatest length for N. to S. is 195 m., and greatest breadth, 110 m. Its land area is 12,868 sq. m. and total area 15,765 sq. m. Pop. 2,542,600. It is the most densely populated major state in Europe.

The provs., with area and pop. are: Groningen (898 sq. m., pop. 447,400); Friesland (1325 sq. m., 436,600); Drenthe (1029 sq. m., 269,700); Overijssel (1301 sq. m., 833,500); Guelders (1939 sq. m., 1,019,700); Utrecht (526 sq. m., 544,600); N. Holland (1081 sq. m., 1,759,400); S. Holland (1130 sq. m., 2,256,100); Zeeland (690 sq. m., 258,500); N. Brabant (1920 sq. m., 1,168,500); Limburg (816 sq. m., 677,600); Noordostelijke Polder (183 sq. m., 1800). Inhab. without fixed residence, 48,400. The prin. tns. (over 25,000 pop.) are: Amsterdam the commercial cap. (798,300), Rotterdam (637,100), The Hague, seat of gov. and the official cap. (523,700), Utrecht (183,200), Haarlem (155,700), Eindhoven (132,500), Groningen (131,200), Tilburg (113,000), Nijmegen (105,900), Enschede (100,100), Arnhem (96,000), Leyden (86,400), Breda (81,400), Hilversum (84,200), Apeldoorn (82,600), Leeuwarden (75,600), Maastricht (75,800), Schiedam (69,000), Dordrecht (67,500), Delft (61,000), Heerlen (56,300), Amersfoort (55,400), Emmen (53,500), 's Hertogenbosch (53,400), Zwolle (46,800), Hengelo (45,500), Deventer (43,900), Vlaarding (42,900), Ede (42,300), Zaandam (41,100), Venlo (40,900), Velsen (40,700), Kerkrade (40,372), Zeist (40,200), Almelo (39,000), Alkmaar (37,400), Gouda (36,900), Voorburg (35,600), Haarlemmermeer (35,600), Bussum (33,300), Helmond (32,500), den Helder (31,500), Rheden (30,400), Rosendaal (29,300), Bergen op Zoom (28,200), and Beverwijk (25,900).

In a small space it is difficult to give an adequate idea of the hist., so rich in events that strike the imagination, as that of the people of the Hollow-land, for that is the significance of the name, Holland. 'Here, within a half-submerged territory, a race of wretched cannibals dwelt upon tepal or mounds which they had raised, like beavers, above the almost fluid soil. Here at a later day, the same race chained the tyrant ocean and his mighty streams

into subserviency, forcing them to fertilise, to render commodious, to cover with a beneficent network of veins and arteries and to bind by watery highways with the furthest ends of the world a country by nature disinherited of its rights. A region outcast of ocean and earth, wrested at last from both domains their richest treasures. A race, engaged for generations in stubborn conflict with the angry elements, was unconsciously educating itself for its great struggle with the still more savage despotism of man. In these words Motley sketches the cosmo- and techno-drama of

the Zuider Zee. The resulting polder being 523,000 aca. of land. By 1946 the following work had been completed: the Noordholland-Wieringen Burrage of 2 km. (1925), the Wieringmeer polder of 50,000 ac. (1930); the Wieringen-Friesland Burrage of 30 km. (1932) and the Noordsteiljke (N.E.) polder of 120,000 ac. (1942). The polders still to be completed (1948) are those of the S.E. and S.W. When completed the only remaining part of the Zuider Zee will be the Yasselsee, equalling 300 000 ac., retained as a fresh water lake. The maintenance of the



D. McLeish

A DUTCH VILLAGE BUILT ON SHELTERING COASTAL DUNES  
Zoutelande, Isle of Walcheren

the Dutch folk. The features of the low-lying Dutch landscape are too well known to need description: but the placid aspect of the waterways, studded with the peculiar windmill with pumps for regulating the supply of water gives no indication of the unmitigated toil that is represented by the dykes and embankments which hold the sea in check and keep canals and rivers from overflowing their banks. Mechanical drainage, however, has now practically ousted wind power. The people have a saying that 'God made the sea, but the Hollander made the land,' and as far as their own land is concerned, that is perfectly true. They have turned the marshes formed by the delta of the Maas, the Rhine, and the Scheldt, into arable land and have reclaimed vast tracts from the sea. The lands thus reclaimed are called polders, and are highly valued. In 1818 an Act was passed to form a new prov. by damming and draining parts of

canals which run like a network all over the country, linking up riv. and lake, and the reclamation and drainage of the land are the work of a special public dept. called the Waterstaat, and involve the country in an expenditure of considerably more than £500,000 a year. Locks were in use on canals early in the fourteenth century. The largest lock in the world, that at Ymuiden, on the canal connecting Amsterdam with the sea, was opened by Queen Wilhelmina in 1930. The people of Holland have many characteristics in common with the Brit. The Dutch are a freedom-loving people, inventive and industrious. They have all the courageous qualities of seafaring folk, and have proved themselves as a nation and as colonists willing to make great sacrifices to gain or retain liberty. Among her illustrious explorers are Hudson, Heemskerck, Schouten, Lemais and Tasman. Their colonial possessions, like those of

Great Britain, are vastly out of proportion to the size of the mother country. Their E. Indian possessions include Java and Madura, Sumatra, the Moluccas, Celebes, Timor, parts of Borneo, and New Guinea; in the W. Indies, Surinam and Curaçao are their prin. possessions. After the defeat of the Jap. in 1945, however, the Indonesians rose in revolt against their Dutch overlords, demanding complete autonomy (see below under *History*); and DUTCH EAST INDIES; INDONESIA; JAVA. The Boer nation are descendants of sixteenth-century Dutch colonists in S. Africa.

**Communications.**—The favourable situation of Holland, half-way between the North Cape and the straits of Gibraltar, on the most navigated sea of the world at the mouths of excellently navigable rivers, communicating with the whole of Central Europe by a system of canals, makes the country a natural gateway, as well as an emporium and centre of commerce. In this way two seaport towns, came into existence which play a very important part in the world's trade—Rotterdam and Amsterdam. The equipment of docks, quays, store-houses, loading and unloading installations in both harbours is completely adapted to world shipping. Rotterdam, before the Second World War, depended for 75 per cent of its trade on land traffic to Germany and Switzerland and today the capacity of its docks exceeds the demands upon it because of the decline in the Rhine trade. In 1939 the number of Dutch vessels navigating the Rhine was over 6500, being 51 per cent of the total Rhine navigation. The country itself is intersected by a number of rivers, and canals, linked to the water and railway transport system leading to the heart of Europe. The other Dutch ports, although smaller, have very modern equipment and good communications with Central Europe. N. of Amsterdam lies Zaandam, the port of the highly industrialised Zaan dist. The N.E. port of Delfzijl specialises in coastal trade, notably to Scandinavia and England, as does Harlingen in the N.W. from which a number of regular services to England are maintained. Terneuzen, on the estuary of the R. Scheldt, is important chiefly in that it serves as a port to the local industries. On the map, it is observed that Holland is situated at the junction of important high roads of economical significance. England lies across the N. Sea. Belgium and France meet Holland in the S., Switzerland and Czechoslovakia are also easily attainable. Central Europe begins on her E. frontier and in the N. are the Scandinavian countries. The international airport of Schiphol near Amsterdam, is the central station for airlines flying in all directions of the compass even as far as New York, Rio de Janeiro, Cape Town and Batavia. Sev. important international airlines use the well-equipped landing-field at Schiphol, while it plays an important part also as a night-mail airport. The Royal Dutch Airlines (K. L. M.) have regular services to the most important towns in Europe.

**Railways.**—In Holland the system of railways is not as congested as in some other W. European countries, as a great share of the conveyance of merchandise is by inland navigation. As the railway traffic is mainly a passenger traffic, its speed surpasses that of neighbouring countries. A great part has been electrified. During the Ger. occupation in the Second World War the Dutch railways suffered much by the war operations. After the liberation the situation of the railways was chaotic: hardly any locomotives were left, whereas the few that remained were so badly damaged that at first they could not be used. Passenger-carriages and goods-vans had been transported to the East, rails had been taken away as well as the overhead wires of the electric railway system.

**Industry** in Holland absorbs about 40 per cent of the working pop., which is rather a curious fact, taking into consideration that the country itself is short of raw materials. Iron-ore, wood and oil must be imported from overseas, only in the S. is coal obtained in considerable quantities, which covers part of the home requirements. Potential oil-fields are being exploited in the E. part of the country. The output of the salt-mines in the E. can completely meet the inland requirements and even allows a considerable export of this commodity. The favourable location of Holland makes it possible on the one hand for raw materials to be easily imported, and on the other hand for the industrial products to be as easily exported to all parts of the world. Consequently coupled with the experience and skill of the workers, Dutch industry is primarily one of refining, in which the raw materials are processed into products for export as may be exemplified in its superphosphate and oil-works. In normal times 70 per cent of the superphosphate production was exported. The oil factories either delivered the oil obtained from cupra and seeds to the margarine- and soap-works, or they exported the final product directly to foreign countries. Blast furnace works are estab. in Ymuiden. Here imported ores are processed, the greater part of the iron being again exported. Before the war Java furnished about 90 per cent of the world's production in cinchona, which for the greater part was used by Dutch industries. This was also the case with cocoa, rice and tin production. For non-tropical products, Holland was an important world supplier. The various breweries, the margarine- and soap-works as well as the gin and liqueur distilleries may be mentioned in this respect. The great labour productivity of the Dutch people has caused industries to be developed which demanded specialised labour, such as the diamond industry, ship- and machine-building, china and earthenware manuf. as well as the radio, electrical, textile and chemical industries. Agriculture and cattle-breeding, practised widely and scientifically, founded the dairy industry, one of the first industries in Holland. Dutch butter, cheese, condensed and evaporated milk and milk-



powder are known everywhere. About half of the products from the dairy industry were destined for foreign markets.

Agriculture and farming brought into existence the important industries of canned foodstuffs, potato flour and straw board. Besides the manufacturing industries, handicrafts have flourished. The fine handiwork of gold and silver smiths and other artificers, as well as the products of the furniture maker's, glazier's and industrial arts find their way to both the home and foreign markets together with industrial products.

**Mining**—In the N., Holland possesses 12 mines all with modern equipment four the property of the gov. In the years preceding 1940, the coal production amounted to about 13 million metric tons, per annum. The Dutch mines supply a type of coal best suited to industrial purposes. Before the Second World War part of the coal destined for industrial use was exchanged abroad for house hold coal. After the liberation the production of coal from the mines decreased considerably owing to various causes such as under nourishment of the miners, lack of material enlistment of mine workers into the services, the departure of foreign labourers, and labour conflicts which arose all over the world. Through shortage of shipping space the elimination of the Ruhr as a supplier, the decline in the output of foreign collieries and miners' strikes abroad, the imports of coal were not sufficient to cover the requirements of the industries and private use. However, the production rose from 326,000 tons per month in 1945 to 840,000 tons per month in 1947.

As a secondary by product to coal mining reference can be made to coke and briquette factories, chemical factories for the production of nitrogen, hydrochloric acid, chloride of lime, coal tar products, etc. The chemical works which manufacture secondary products of coal have an important share in the industrial production of Holland. Thus, important industries have been created such as those of artificial manure, plastics, dyes, pharmaceutical products, alcohol, lubricants, soap, artificial silk, perfumes, road covering materials, insecticides, saccharin and disinfectants. These articles form an important part of Holland's export. It can be expected that this young industry, which is so closely linked up with coal mining, will considerably expand in the future.

**Agriculture and Horticulture**—Owing to the dissemination of excellent agrarian information, and extensive research work, Dutch agriculture has succeeded in gaining, qualitatively, an important place in the world. Because of the density of the agricultural population Dutch agriculture had to specialise in the production of fine agric. produce, such as valuable seed crops, vegetables and fruit, bulbs and decorative plants. In addition Holland has the advantage of having neighbouring countries which have developed gradually into industrial countries. Consequently their demand for agric. products has increased considerably in the course of

years. The communications between Holland and her neighbours are short, which makes it possible to bring the above mentioned products fresh on the foreign markets. Even aeroplanes are sometimes used for this purpose. The importance of the export of agric. products is shown by the following figures before the Second World War Holland exported from 200,000 to 350,000 tons of potatoes; in no other country in Europe did the export of potatoes exceed 100,000 tons. As for cheese, about 60,000 tons were exported against a bare 20,000 tons from other countries. The export of condensed milk amounted to 170,000 tons. Denmark only once reached a quantity of 20,000 tons and the exports of other countries were even far below this amount. The importance of Holland's export is also shown by the fact that of the total production of bulbs, trees, shrubs, vegetables and fruit, 90, 90 and 70 per cent respectively (according to their values) were exported. In 1938, 64 per cent of the total value of butter, cheese and milk powder produced was exported. In the same year export figures for poultry (for consumption purposes) and egg production amounted to 28 per cent and 50 per cent respectively of the total value, although fertilisers and fodder had to be imported. Seen from this point of view it can be easily understood why Holland takes the fifth place among the wheat importing countries, fourth place for the import of barley and third place for corn. This implies therefore that Holland is an important buyer for grains on the world market. The high standard of Dutch agriculture is also evident by harvest results, these being considerably above the average for Europe in 1939.

**Fisheries**—Fishing is one of the oldest Dutch trades which throughout the ages has made important contributions towards the national income. The herring industry is intensively developed and before 1940 Holland had a very modern herring fleet. In 1938 the herring catch amounted to 100,000 tons in weight which represented a value of over £800,000. Many ships were lost through war operations or were rebuilt by the Germans for war purposes. In May, 1946, however, thanks to the initiative of shipping companies and fishermen, a herring fleet again sailed from Scheveningen for the first time since the beginning of the war.

A remarkable activity has developed in the exploitation of modern refrigeration ships. The whaling industry which in former centuries used to be of great importance in Holland, but declined in later years, has been reorganised. There is also oyster culture in the prov. of Zeeland.

**Defence**—The pre 1940 Army was composed partly of volunteers and partly of men drawn by lot for five years' service, and kept on a peace footing of nearly 400,000. The colonial army numbered nearly 40,000, of whom about 14,000 were Europeans. The *schutterij* are a kind of soldier policeman who, in times of war, can be mobilised. The armed forces are in the process of being re-organised. The

Dutch Navy consists of an escort aircraft carrier, *Karl Doorman* (13,800 tons), 2 cruisers of 3350 tons displacement and an armament of 4-in. and 6-in. guns; 7 destroyers, 12 submarines, 4 minelayers and other craft. Many of the ships of the pre-war Navy were assigned to the E. Indies Fleet. Both Army and Navy have their own separate Air Force.

**Government and Justice.**—The gov. of H. is a limited and hereditary constitutional monarchy. The executive power of the State belongs exclusively to the sovereign but is exercised by a responsible council of ministers. The legislative

power is vested in the States-General and confirmation of the Bill by a two-thirds vote of the new States-General.

Justice is administered by the High Court of the Netherlands (Court of Cassation), by five courts of justice (Courts of Appeal), by nineteen district tribunals, and by sixty-two cantonal courts. Trial by jury is unknown. The Cantonal Court, which tries minor offences, is constituted of a single judge; the more serious cases are tried by the district tribunals, formed, generally, by three judges; the courts are constituted of three and the High Court of five judges. All judges are appointed



D. McLeish

## AMSTERDAM

The Voorburgwal Canal and the Church of St. Nicolaas

rests conjointly in the sovereign and States-General. The latter, or Parliament, is bi-cameral: the first or upper chamber is composed of fifty members, elected by the Provincial States; and the second chamber of 100 deputies elected directly. There is universal suffrage and the system of election is by proportional representation. Deputies are elected for four years and retire in a body, whereas the first chamber is elected for 6 years, one-half retiring in rotation every three years. The gov. and the second chamber only may introduce new Bills, the functions of the upper chamber being restricted to approval or rejection, without power of amendment. The meetings of both chambers are public, though each may, by majority decision, form itself into a private committee. The ministers may attend the meetings of the States-General, but unless they are members, they have only a deliberative vote. Alterations in the Constitution can be effected only by a Bill giving reasons, followed by dissolution

for life by the sovereign (the judges of the High Court from a list prepared by the Second Chamber). They can be removed only by a High Court decision.

**Culture, Education, and Religion.**—In practically every domain of art and science the Dutch have contributed a signal share. Although comprising only a small percentage of the European population, the Dutch people have on the whole an honourable share in European culture and in some instances, have even made a preponderate contribution. In New York and Paris, in the National Gallery in London as well as in the Hermitage in Moscow, the pictures of Rembrandt, Frans Hals, Ruysdael, and Johannes Vermeer bear witness to the glory of Dutch painting in the seventeenth century. Of the painters of a later period Van Gogh and Breiter have especially become famous. The Amsterdam Symphony orchestra (Conzertgebouw) is among the best orchestras in the world. Amsterdam, having been constructed from

anct. times onwards according to a definite scheme, is from an architectural point of view one of the most beautiful cities in the world. The seventeenth-century buildings and the modern quarters vie in beauty and stateliness, thereby giving an excellent example of Dutch architectural taste. The numerous monumental churches all over the country within whose walls an intensive spiritual life flourishes, also form a lasting reminiscence of the skill of Dutch architects (see further under Dutch Art). The names of Erasmus, Huig van Groot (Grotius), Spinoza, are well-known names in hist.; Stevin, Huygens, Swammerdam and Van Leeuwenhoek excelled in the technical sciences. At the many technical institutes and laboratories scientific pioneering labour has been effected and continuous research work is being done to find new methods and improve results. Since the 'Nobel' prize was instituted, it has been awarded on sev. occasions to Dutchmen: the scientists Van 't Hoff and Debye for chemistry, Lorentz, Zeeman, Van der Waals and Kamerlingh Onnes for physics, Einthoven and Eykman for medical science and Asser for peace.

H. has a well-founded reputation for a superior system of education. It is compulsory under National Law (since 1920) for students to attend school up to their fifteenth birthday. Most students however avail themselves of an excellent system of secondary schools.

The anct. univs. of Amsterdam, Leyden, Utrecht, Groningen have been supplemented by the Rom. Cath'olic Univ. of Nijmegen and the Calvinist Univ. of Amsterdam; there are also three univs. specialising in agriculture, technical subjects, and economics. There are naval and military colleges at Breda, and technical colleges at Delft.

Entire liberty of conscience is granted to the members of all religious confessions. The royal family and a great part of the people belong to the Reformed Church. By the census of 1930, the adherents were: Dutch Reformed Church, 2,732,000; other protestants, 877,000; Catholics, 2,890,000; Jansemits, 10,000; Jews, 112,000; other creeds or those of none, 1,314,000 (other, 169,600, no religion, 1,144,400).

The language of H., though akin to both Eng. and Ger., has yet a separate identity. In the eleventh century the anct. Dutch dialects were spoken in a wider area than that now occupied by the present H. and Flanders, and old Dutch (or Flemish) is still to be heard among villagers in the N. of France. Early in the fifteenth century literary clubs were founded by the Rederijkers, or lovers of letters, who met together to study literature and plays. To these clubs modern Dutch owes its origin. From the twelfth to the sixteenth century there was no unity either in the written or in the spoken language. A trans. of the Bible ordered by the Dutch Gov. in 1619 and carried out by the best Dutch and Flemish philologists further laid the foundation of modern Dutch. A uniform mode of writing was achieved in all provs.

during the eighteenth century, but uniform speaking of the 'Standard' Netherlandish is still one of the aims of Flemish teaching in particular. In 1946 the spelling of Dutch was simplified after decades of discussion led by the fervid promoter, Dr. Kolloewijn.

The liberty of the Press brought much foreign printing to H., and the *Gazette de Leyde*, which distributed news to all parts of the world, was in existence from 1680-1814. Illiteracy hardly ever occurs in H. Knowledge of foreign languages is customary rather than exceptional a fact common in small countries with export m'rks, and forced on the Dutchman by the fact that their own language is unknown to most of his customers. Long-wave radio stations have been estab. at Hilversum and Huizen, and a shortwave station at Zoelen, which is used largely for transmitting news to the Dutch colonies.

*Literature.*—During the late middle ages literary activity was concentrated almost entirely in the Flemish part of the country. Towards the end of the sixteenth century, the Dutch language proper was perfected, owing this in part to national consciousness aroused by the religious persecutions in the S. Netherlands, dominated by Spain. With the Reformation in H., the young independent country, owing something also to the migration of many Flemish Protestant families to the N., became the centre of literary life. The most brilliant writer of this period, generally called 'De gouden eeuw' (The golden century), was Joost Van den Vondel (1587-1679), an outstanding poet, whose successful tragedies are still regularly performed. Important contemporaries are the popular allegorist and moralist Jacob Cats (1577-1660) and the more satiric humanist C. Huygens (1596-1687). P. O. Hooft (1581-1647) is the author of beautiful erotic poems and of one of the best comedies of that time and G. A. Brødere (1583-1618) depicted in his moral pieces vice in rude terms. This rich classical period of the Dutch literature ended in the last decades of the seventeenth century. J. Luyken (1619-1712), a melancholic mystic, may be considered to be the last important poet of the 'golden century.' In the eighteenth century literature declined, being mostly imitative of Fr. models, but a major exception is W. Langendijk (1683-1756), writer of numerous and good farcical comedies. The first decades of the nineteenth century witnessed the rise, of romanticism. Willem Bilderdijk (1756-1831), A. C. W. Staring (1747-1840) and H. Tollens (1780-1856) are the most characteristic figures of this transitional period. I. da Costa (1798-1860) trans. and introduced Fr. and Eng. romantic poets to Dutch readers. The romantic movement in H. was encouraged by a literary periodical *De Gids* (The Guide), ed. by Bakhuizen van den Brink (1810-65) and E. J. Potgieter (1808-75). The latter was a successful poet and novelist as well as a critic, and his influence was strong towards the encouragement of a

national literature. Van Lennep (1802-1868) who first trans. Walter Scott into Dutch and wrote some remarkable historical novels, enjoyed great esteem, while important contemporary novelists were Limburg-Brouwer (1795-1847), Anna Bosboom-Toussaint (1812-86) and Alberdingk Thijm (1820-89). At this time a group of brilliant writers, including especially N. Beets (1814-1903) and P. Hasebroek (1812-96) were founding their work on Eng. models but revealed their native originality in their observation of Dutch life. In 1860 the *Nederlandse Spectator* appeared, a weekly review associated especially with M. P. Lindo (1819-1877), an Englishman by birth and translator of Fielding and Sterne, and C. Vosmaer (1828-88), an artist and poet. In 1860 also was pub. *Max Havelaar*. This book was an indictment of Dutch colonisation written by Eduard Douwes Dekker (1820-87) under the pseudonym 'Multatuli.' It was undoubtedly the most important book of the century, and Dekker had a great influence on the succeeding generations, who greeted in him their pioneer. Those who derived from Dekker and his sensational work were the poets W. Kloos (1859-1938), F. van Eeden (1860-1932), A. Verwey (1865-1937) and the sensitive Van Deyssel (b. 1864). They were fervent adherents of 'art for art's sake' and associated in a periodical *De Nieuwe Gids* (*The New Guide*), opposing them to the superannuated *Guide*. His first publication in 1887 marked another literary event in the second half of the nineteenth century, inaugurating a prolific movement in which the poet H. Gorter (1864-1927), the novelists L. Conperius (1863-1923) and J. van Looy (1855-1930) and the dramatists H. Heyermans (1864-1924), and Jan Fabrikus (b. 1871) stand out as pre-eminent. Later writers are I. Querido (1873-1932), author of naturalist novels and the poets P. C. Boutens (b. 1870), J. H. Leopold (1865-1927) and Henriëtte Roland Holst (b. 1869) and the novelist A. van Schendel (b. 1874). Among the poets of the latest decades should be noted Adama van Scheltema, G. Gosswaert, J. G. Bloem, J. Ghesloot, Wernicus Buning J. Slanerhoff, H. Marsman, J. Engelman and A. Donker. Among the novelists are mentioned: A. Van der Leew, N. Van Suchtelen, A. Coolen, S. Vredijk, J. Fabrikus Jr., F. Bordewijk, A. Den Doolaard, A. Holman, and T. de Vries. See also FLEMISH LITERATURE.

*History*—The inhabs. of the Netherlands are descendants of a people called by the Romans the Batavi, who lived on an is. between the two branches of the Rhine, and the Frisians who dwelt further N. They are described as a hardy, hospitable, faithful folk, who hunted fish and, or led a pastoral life. Their religion was simple, and they were chaste and honourable. The Rom. rule lasted until the fourth century, when the Franks overran the country. Charlemagne's dominion in the eighth century extended to the Netherlands, and he built a palace at Nijmegen on the Waal. Upon the establishment of the

feudal system the country was divided into small sovereignties. In the year 922 Kirk became count of H. and the other Netherlands provs. such as Namur, Hainault, Limburg, and Zutphen, were divided between various barons and counts, autocratic rulers, owing allegiance to the dukes or earls of Lorraine, Brabant, and Flanders. Holland, Zeeland, Utrecht, Overijssel, Groningen, Drenthe, and Friesland, which were afterwards to form the United States of the Netherlands, were chiefly under the rule of the counts of Holland and the bishop of Utrecht. It was during the 'five dismal centuries of feudalism' that cities began to spring into importance and the rise of a world-wide commerce began. In 1381 the Netherlands became the property of the duke of Burgundy, and a little more than a century later were united to Spain under Charles V. The struggle for freedom and for civic and religious independence that was to last so long had already begun and came to a crisis in the reign of Philip II of Spain in the middle of the sixteenth century, the immediate causes being the imposition of the Inquisition with all its horrors upon the people, and the maintenance of a standing army. Wm. prince of Orange, known as Wm. the Silent, was the king's lieutenant in Holland, Zeeland, and Utrecht, and to his devotion to the cause of the rights and liberties of the people the republic ultimately owed its existence. It would cover too much space to give even an outline of the story of the war waged by the burghers against political and religious tyranny. By the capture of Briet in 1572 Spain received the first reverse, and the people who had been ground into dust began to hope. In 1579 the Union of Utrecht was formed, by which the N. provs. banded themselves together to resist Spain, and in 1581 the Netherlands declared their freedom. Wm.'s assassination 1584 did not prevent the continued success of the people against the efforts of Philip to regain the lost provs. He was beaten again and again at sea, and his successor was obliged to sue for a cessation of arms for twelve years. These years enabled the Dutch to regroup themselves for losses by attention to trade. The war, renewed after the armistice, was continued until 1648, when, by the treaty of Munster Spain recognised the independence of the Netherlands.

While this protracted struggle was in progress, the Dutch were making themselves masters of the sea. Their ships were in every ocean. The E. India Company, which led to the foundation of their Indian empire, was started in 1602. Amsterdam, which instituted the first Stock Exchange or Bourse, in 1532, had become one of the richest cities in the world. Trade brought rivals, and two great naval wars were fought against England in 1622-54, and again in 1664-76 in which the Eng. admirals found themselves about equally matched by De Ruyter, Van Tromp, and others—the former, inflicting upon England the indignity of sailing up the Medway and the Thames,

destroying ships, in 1667. Then followed the war in which France and England were united against the republic; and which but for the Dutch prowess at sea, might have ended disastrously for the Netherlands. The political struggle between the De Witt faction and that of the prince of Orange ended with the terrible death of the brothers De Witt and the triumph of Wm. of Orange, who secured the friendship of England by his marriage

were formed into the kingdom of the Netherlands. This union was not satisfactory; there were temperamental and religious differences between the people that were not easy to harmonise. In 1830, therefore, the S. provs. seceded and Belgium was formed into a separate kingdom. The decline of H. as a world-power after the seventeenth century would seem to have been due to some extent to the diverse Celtic and Ger. elements in the



National Gallery, London

THE PEACE OF MÜNSTER, MAY 15, 1648, BY GERARD TERBURG

The scene in the Rathaus, Münster, Westphalia. Left to centre, raising the right hand, are the six delegates of the Dutch United Provinces: W. Ripperda for Overijssel, F. de Doffa for Groningen, G. van Reede for Utrecht, A. Pauw for Holland, J. van Matenesse for Friesland, and B. van Ghent for Gelderland. Centre right, their right hands on the Gospels, are the plenipotentiaries of Philip IV. of Spain.

with Mary of York. This led to his subsequent elevation to the throne of England, under the title of Wm. III. Eng. and Dutch then fought side by side in inflicting defeat upon Louis XIV. of France. The treaty of Utrecht in 1713 concluded the war, and also the period of Holland's greatness as a world power.

The close of the eighteenth century saw the Netherlands overrun by Napoleon's troops and paying tribute to France. Louis Bonaparte was made king of Holland in 1806, but resigned four years later and the country was attached to the Fr. empire. During these changes the Orange family had been obliged to make their escape, but on the fall of Napoleon they were recalled, and the N. and S. provs.

pop.—elements dissimilar in their tendencies and always difficult to reconcile. The prin. events in the hist. of the kingdom since 1830 are, briefly, the following: In 1810 Wm., for political reasons abdicated in favour of his son, who, in 1848, granted a new constitution to the people. The question of the duchy of Luxemburg (from 1815 a title of the king of H.) was settled in 1868 by making it an independent state. In 1887 the Dutch obtained from their sovereign a new constitution by which the electorate was largely increased. In 1890 Queen Wilhelmina, then only a child, came to the throne. Her husband was Prince Henry, duke of Mecklenburg-Schwerin (d. 1934) and her daughter Princess Juliana (b. 1909) became heiress to the throne to

which she succeeded in 1948 (*see below*). The Palace of Peace, to which many nations contributed, was opened in 1913. It is situated at The Hague. H., after the Belgian secession from the joint kingdom set up in 1814, played little part in European hist.

In the last decades of the nineteenth century there arose a vigorous movement of material and intellectual expansion, a movement which had by no means spent its force even after the shocks of the First World War, which naturally affected H.'s overseas trade. In the inter-world war period, new industries were still coming into existence, as e.g. the Phillips electrical works at Eindhoven, the rayon industry at Breda; while, at the same time, agriculture, particularly cattle breeding dairy farming, and horticulture, all of which industries in the previous decades had begun to make good use of new methods of organisation and scientific research, greatly prospered. Again, the coalfields of S. Limburg, which owed their later development to the fact that during the First World War the supply of Ger. coal became restricted, were exploited with considerable success; while the great scheme for the reclamation of the Zuider Zee, so as to add a new prov. to the country, was launched (1924). (*See supra*). During the First World War H. remained neutral and consequently was not so seriously affected by it as the belligerent countries. The ex-Kaiser Wilhelm and the ex-Crown Prince found refuge at Amerongen when they fled from Germany in Nov. 1918. The ex-Kaiser settled at Doorn. Although faced with the problems arising out of the war (1914-18), the Dutch Gov. persevered with the policy of political and educational reform to which it was committed by the previous Liberal and Radical govs. of Kuyper and Bos. Probably the quickened sense of national solidarity accelerated the rate of social reform: for in 1917 the gov. had carried out its programme. Universal suffrage and proportional representation were introduced: at the same time, the principle of absolute equality with regard to the public exchequer of 'public' undenominational education and 'private' denominational education, was conceded in full and incorporated in the Constitution.

*History during the Second World War.*—Ger. planes bombed Dutch ins. before dawn on May 10, 1940 and then land forces crossed the frontier. This attack had been expected, but its exact direction and timing were partly a surprise. The Dutch had no experience of modern warfare. It was five generations since the last hostile troops had entered their ter. They were now to receive the rudest awakening, and their situation was aggravated by an immense Fifth Column (q.v.): for there were 100,000 Gers. living in Holland and a great many belonged to the National Socialist movement led by A. A. Mussert, a Dutch engineer in charge of the roads of Utrecht, who consistently followed the line of propaganda of Dr. Goebbels (q.v.). Later, on May 10

numerous Ger. paratroops were landed, especially on the big aerodrome of Waalhaven. The strategic situation in the vital S. of H. was weakened by the fact that the Dutch and Belgian defence-systems did not really supplement each other and to some extent it may even be said that the Belgian system was based on a Ger. occupation of the Netherlands, whereas the Dutch system envisaged the possibility that the Ger. forces would pass through the S. of the country and leave the heart of H. alone. On May 11 a Ger. armoured column entered Brabant and violent fighting occurred in the Hague. In the S. of the country Ger. armoured forces now constituted the gravest menace and, on the next day, they reached Dordrecht, thus cutting communications with Belgium and France. In the N. the Dutch succeeded in beating off a heavy attack when the Gers. tried to cross the Zuider Zee. The following day the Queen left on a Brit. destroyer for England and later that day was followed by the Dutch cabinet. The Dutch troops, forced back on the *Grothe Linie*, retired to the *Water Linie* but their reserves were fully occupied against paratroops and fifth columnists. On May 14 the Ger. armoured column reached Rotterdam and heavy fighting took place between the Gers. on the S. and the Dutch on the N. of the riv. The Gers. now decided to destroy the centre of Rotterdam by air bombardment in order to force the Dutch to surrender, and within four hrs. 25,000 dwellings were destroyed and the entire centre of the city became a blazing inferno. In that single afternoon 30,000 persons perished and another 80,000 were homeless. The city was still burning a fortnight later, for the water mains were damaged. Without doubt thousands of people suffered lingering deaths under the burning ruins with no hope of rescue. Whole vills., too, were wiped out in a few hrs. In the face of this, one of the worst crimes of human hist., there was no course open to the Dutch commander but to surrender and the Dutch troops laid down their arms, though some continued to fight for some days in Zeeland. Thus ended the brief and tragic Five Days' war in the Netherlands (*see further under* WESTERN FRONT IN SECOND WORLD WAR). The Ger. vanguard entered Amsterdam on the 15th. Ordinary life came to a standstill. Thousands of people committed suicide, most of them Jewish or non-Jewish refugees from Germany. To make a good impression on the Dutch Hitler appointed Dr. Seyss Inquart to be Ger. Commissioner for the occupied Netherlands. His supposition was that the Dutch would like an Austrian better than a Prussian, but the people had not forgotten Seyss Inquart's betrayal of Austria. As in Belgium so in H. the Gers. tried to win the people by propaganda and cajolery. They announced that the New Order would leave things as much as possible in the hands of the Dutch themselves. Dutch prisoners of war were speedily returned—but only to swell the ranks of the unemployed after

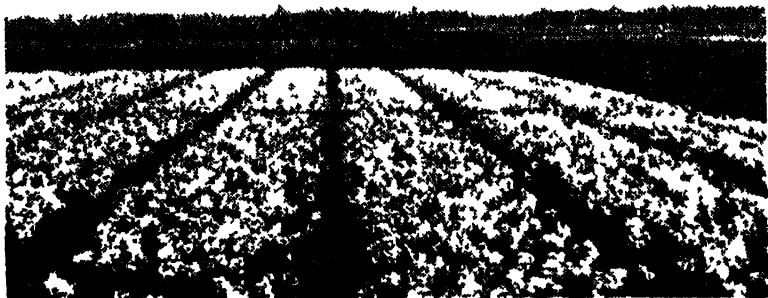
a 'reconstruction scheme' had proved a failure. The Nazification of H. was to be organised so gradually that the Dutch would be hardly aware of the process. A Council of Secretaries-General was to be the nominal gov., but the real gov. consisted of the Reichskommissioner and his assistants, while a group of Ger. officers were appointed to supervise Dutch provincial and municipal life. The Ger. order was characterised by its financial organisation under which Berlin was the centre of a European system of multi-lateral clearing, which made it easy for the Reich to sap the economic resources of the countries occupied by their troops. Dutch factories which fitted into the Ger. war-machine had orders forced upon them. The Dutch wharves were used for constructing Ger. U-boats. Dutch engineering industry was soon working to full capacity on Ger. army orders. High prices were paid for agric. produce, but in reality the Dutch farmer was paid with the financial reserves of the Dutch people, of which his own reserves necessarily formed part. The damage of the Five Days' war was put at £200,000,000 or half the national income; but the Dutch State had to pay the usual costs of occupation, which were calculated at £6 per head of the pop., i.e. £48,000,000 a year or half the State's yearly expenditure. Thus H. was crushed under its financial burdens and the standard of living rapidly declined. Produce was carried away into Germany. Supplies, whether ample or scarce, were in the first place destined for consumption by the Ger. troops. The people were reduced to the role of mere drawers of water and hewers of wood for the Ger. overlords. Everything was done by Seyss Inquart to impregnate Dutch institutions with the 'Nordic culture'. A Council of Enlightenment was created to supervise the activities of the Press. The Dutch trade union movement was taken over by the Dutch Nazis and a 'Strength-through-Joy' movement was organised under the Labour Trade Union. All Dutch artists, who refused to join a Nazi 'guild', were excluded from official commissions. A special body was set up to examine all school-books and hundreds of thousands of books were destroyed. Public libraries were ruthlessly mutilated in the interests of 'friendly relations between Germans and H.'. The fact that the Dutch people proved to be immune against Nazi cultural infiltration was largely due to the Churches, which developed into a stronghold of patriotism. All Jews were dismissed from the Civil Service. But if the Gers. were able to close all schools and univs. and to fill the papers with propaganda and broadcast Nazi speeches all day, they were not able to turn the Dutch themselves into Nazis. This is the more creditable to the Dutch in view of the careful preparations from 1933 onwards by A. A. Mussert to secure the destruction of the independence of H. in the interests of the Nazis who, as early as that year, placed large funds at his disposal for purposes of subversion. Seyss Inquart declared that it was forbidden to speak

about national independence under the House of Orange. The programme of the new 'Nederlandsche Unie' seemed at first to involve a compromise with the Nazis. Final judgment about the Unie must be reserved, but at least the organisation rendered service as a rallying-point of Dutchmen who refused to be browbeaten by Dutch Nazis. Queen Wilhelmina remained more than ever the symbol of the will to resistance. There was active resistance too and the Ger. military commander found himself forced to issue warnings against all kinds of sabotage.

H. did not again figure in land operations until late in 1944 when the Anglo-Amer. chiefs of staff decided to use the newly-constituted Brit. and Amer. Airborne Divs. on Sept. 17, to assist in seizing the Rhine crossings at Nijmegen and Arnhem after the rapid advance by the land armies. It seemed probable that through rapidity of exploitation both the Siegfried Line (q.v.) and the Rhine might be crossed and strong bridgeheads established before the Gers. could recover sufficiently to make a definite stand in the Arnhem area. Had this been accomplished it might well have shortened the war by several months and the attempt would appear to have been justified for from the time when the allied armies first crossed the Seine in force to the employment of the Airborne Army in H. on Sept. 17, the ground forces made prodigious strides. The first landings of the airborne troops were made on Sept. 17 and reinforcements followed on successive days. Eindhoven soon fell to the allies but heavy Ger. resistance slowed down the follow-up of the Brit. Guards Armoured Div. Nijmegen was still held by the Gers. as too was the extremely important concrete and steel bridge crossing the Waal, and even when this bridge had been crossed the Brit. forces found that the Gers. had had time to oppose a strong anti-tank screen. There was confused and heavy fighting in the area between Nijmegen and Arnhem during the ensuing few days and the position of the First Airborne Div. became so precarious that on Sept. 25 orders were given for the withdrawal of all forces across the Lower Rhine (for full details see WESTERN FRONT IN SECOND WORLD WAR.—*Battle of Arnhem*). After this the Allies turned their attention to opening up Antwerp, for though the great port had fallen to them on Sept. 4, the harbour was useless until the Scheldt estuary was cleared of mines and S. Beveland and Walcheren Is. commanding the sea lane to the harbour had been reduced. The operation to achieve this involved the employment of amphibious forces, but by Sept. 30 the whole of S. Beveland had been cleared by Brit. and Canadian forces and the troops then continued their attack against the causeway connecting the S. Beveland Isthmus with Walcheren. Against Walcheren the Canadians attacked from the W., while amphibious forces, landed (Nov. 1) at both Westkapelle and Vlissingen, converged on the strategic points of the Is. Much help was given to the forces by the support craft of the Brit.

Navy, which, in the highest traditions of the service, 'attracted to themselves the point blank fire of the land batteries, thus permitting the commandos and assault troops to gain the shore with much lighter casualties than would otherwise have been the case'. The three converging ground forces, attacking over terrain made extremely difficult by flooding and suffering heavy casualties advanced with great gallantry against stiff enemy resistance to capture the strong points of Veere and Middelburg and wipe out enemy opposition. By Nov 9 all resistance had ceased and some 10 000 troops had been captured. After this the line

economical way to free the country was to complete the destruction of the enemy forces elsewhere. In N.E. Holland and along the coastal belt eastward, the Canadians continued their operations to clear the area, taking Oldenburg on May 2. In W. Holland, however, no further ground advances were made across the flood barriers behind which the Ger. Twenty-fifth Army lay entrenched. The situation confronting the Allies in W. Holland was difficult. Civilian conditions there had deteriorated steadily for some months, and after the advance of the Allied armies to the F. had isolated the area from Germany, the position of the



*Netherlands Naval Tourist Office*

#### HORTICULTURE IN HOLLAND NARCISUS FIELDS AT LISSE

at Nijmegen westward to the sea was held by the Canadians so that, after the Rhine had been crossed into Germany, a thrust to the Baltic would isolate the Ger. forces in H. Early in April the first Canadian Army was probing into H. Resistance in North Holland collapsed in the first week of April and the ex. was reached on April 15. By the 21st the whole area apart from a small tip in the N.E. was cleared as far as Harderwijk and the E. shore of the IJssel Meer. To the W. the IJssel R. line was stubbornly defended at Deventer and Zutphen but the former fell on April 10. In the S. part the Canadian first Corps attacked from Nijmegen, and Arnhem was taken on the 15th. The Gers. now withdrew into 'Fortress Holland' behind the Grebbe and New Water lines, protected by floods, beyond which no further Allied advance was made in this sector. It was felt by Field Marshal Montgomery that an advance into H. would occasion great additional suffering for that unhappy country and that the quickest and most

pop. became desperate. It was essential, therefore, that steps should be taken by the allies to relieve the growing distress before wholesale starvation took place. The strength of the Ger. defences was such that an operation on a great enough scale to ensure success would have meant a serious weakening of the main allied armies in Germany just when it was all important that they should press home the attacks which were bringing about the final collapse of the enemy there. Moreover, even had the allies been able to launch an offensive against W. Holland at that moment, the Gers. would have opened the dykes to flood the whole country, ruining its fertility for many years to come. The Allied commanders therefore warned Gen. Blaskowitz, the Ger. commander, that such a course would constitute an indeble blot on the honour of the Ger. army and that the retention of Holland could not impede the coming collapse of Germany. Seyss Inquart recognised the hopelessness of the Ger. situation. With the relief of the



Dutch thus assured, no useful purpose was to be served by attempting inroads into 'Fortress Holland' at this time and the liberation of the country soon followed on the final collapse of all Ger. resistance in Europe.

The task of reconstruction was begun immediately after liberation. Of the twenty-five big bridges on the main roads all but six were either wrecked by bombing or blown up by the retreating Gers. and of the twenty-six important railway bridges only three were undamaged. By the spring of 1947 the rebuilding of all the main road bridges had been completed either with permanent or temporary structures and nearly all the railway bridges had been replaced. The main communications having been re-established and the most important harbour installations repaired, constructional energies were next directed to the dual task of house building and rehabilitating the flooded agric. areas (more than 8 per cent of the agric. land was flooded and more than 2 per cent land waste by Ger. fortified zones, minefields and aerodromes), much of the latter task being achieved by the end of 1947. The serious housing situation in which the country found itself after the war is indicated by the fact that nearly one-fourth of the total number of dwellings were damaged and nearly 1.75 per cent totally destroyed. The Gers., however, permitted civil building during the first two years of occupation and some towns damaged in 1940, such as Rhene and Middelburg, were partly rebuilt and a start made on reconstruction elsewhere; but in 1942, when the Gers. concentrated labour and materials on building their 'Atlantic Wall,' all civil building was stopped. By 1949 there were still four years of housing arrears to be made up or about 250,000 houses, a task rendered the more difficult by the fact that the normal rate of increase of pop. has risen from 100,000 per annum before the war to 170,000, and also that temporary houses of prefabricated construction have not been utilised in H., brick being preferred even for small houses as that commodity is the one indigenous material produced in sufficient quantity. Rents are restricted to the 1940 level, although building costs have risen by 300 per cent. The gap between costs and rental values has now been bridged by a gov. subsidy. The city of Amsterdam was the first in Europe to adopt a regional development plan and other Dutch cities have followed its pre-war example encouraged by fresh legislation which gave to a board of commissioners for reconstruction control over the disposal and utilisation of land. Nijmegen has taken emergency measures to rebuild its devastated commercial centre lest it forfeit its position to Arnhem, its rival. Arnhem, where destruction was more widespread, is concerned particularly with traffic access and has a reconstruction plan which provides a ring road round the old centre of the town, links it with a residential suburb S. of the Rhine, and gives new industrial facilities. Un-

like these battlefield towns, Amsterdam did not suffer large-scale damage and has pursued unchanged its progressive pre-war town-planning policy. Open planning of flats in parallel blocks now take the place of the closed court-yard type of plan that prevailed from the beginning of this century almost up to the war. Work has started on a new residential neighbourhood W. of the city, which promises to be a model of its kind and will include a large lake, the Slotervaart, to be formed as the earth required to build up the surrounding ground above polder level is excavated. Amsterdam has, in addition, a planning project for the congested Jewish quarter of the city where the old houses were demolished by the Dutch to provide fuel for the rigorous last winter of the occupation. Here tree-lined boulevards are being laid out for the narrow streets facing the canals. War damage in The Hague was largely confined to two areas, one near the centre and the other to the N. by the suburb of Scheveningen. The rebuilding plan provides a large new square surrounded by gov. offices, which latter are now inconveniently crowded, and a new graded road system within the city. Of all Dutch cities Rotterdam has the most ambitious plans for reconstruction (see under ROTTERDAM).

On Jan. 25 1945 the first special tribunal for the investigation of collaboration charges was opened at 's Hertogenbosch. It was estimated that about 2 per cent of the pop. had collaborated with the Gers. Over 90,000 persons were detained in the course of 1945. On Dec. 12 the leader of the Dutch Nazis, Mussert, was sentenced to death by a special court at The Hague. On May 3 Queen Wilhelmina returned to H. and invited Prof. Schermerhorn, a leader of the newly-formed Netherlands People's Movement, to form a new gov. in combination with W. Drees, a Socialist member of the second chamber. Following the elections for the Lower House (May 17) in which the Catholic People's party and the Party of Labour obtained respectively thirty-two and twenty-one of the 100 seats, the Schermerhorn gov. resigned. Elections for the Provincial States (which in their turn elect the members of the Senate or upper chamber of the States-General) also saw an increase in the representation of the Catholic people's party and Dr. L. J. N. Beel became Prime Minister. The first joint session of the two newly elected chambers was opened by the Queen on July 23.

The dominating question was the Indonesian problem, and, in view of the importance to the metropolitan country of its Indonesian Empire, it is not surprising that the question continued to agitate public opinion both in H. and in the Dutch East Indies and to dominate parl. discussions for sev. years. In July 1946 a bill was introduced for the appointment of a Commission-General to be sent to Java in order to facilitate further negotiations, the conferences between Indonesian representatives and the Dutch cabinet in H. having proved abortive. The Bill,

which delegated wide governmental authority to the Commission-General, was passed by the States-General in the autumn. The Commission (with Prof. Schermerhorn as Chairman) left H. in time to resume the interrupted negotiations in Java at the end of Sept. and returned after the initialling on Nov. 15 of the Cherbon draft agreement (see *INDONESIA*). At once the agreement became the subject of fierce controversy throughout H., Labour and other Left wing parties supporting the proposals while the Calvinist Anti-Revolutionary and other Right wing parties were in determined opposition. The Cabinet eventually announced its intention of adopting the agreement as the foundation of more detailed plans to be worked out by further negotiation. In the parl. debate the final vote (Dec. 20) resulted in sixty-five votes against thirty in favour of the proposals, and the Commission-General, thus strengthened by public opinion in H., then left again for Batavia. The difficulties implicit in the problem of reaching a settlement of this question was the main preoccupation in H. throughout 1947. One major difficulty was that the Indonesians had up till now refused to accept the Dutch interpretation of the Lingradjati agreement, but this agreement was signed on March 25, giving *de facto* recognition to the Indonesian Republic in Java, Sumatra and Madura and envisaging the formation of a sovereign nation—the United States of Indonesia—by Jan. 1, 1949. Discussions that followed with the Indonesian leaders on economic matters revealed differences which could not be adjusted and the gov. then gave the leaders fourteen days in which to make up their minds to take action for the foundation of the United States of Indonesia within the Dutch Empire; but it was obvious that they had next to no control over, or perhaps no real wish to control, the extremist elements in Java and frequent violations of the agreement continued to occur. In July (1947) the Prime Minister (Dr. Beel) in a message to the Indonesians, emphasised that it was imperative that they should cease hostilities if the agreement were ever to become a reality. At the same time a message was sent to the Secretary-General of the United Nations explaining that the action being taken by the Dutch Gov. in Java consisted of police measures only and indicated no change in the decision to carry out the agreement; but later, when the Security Council had the case before them, the Dutch Gov. decided to call off all military action, and when the Council offered to mediate the gov. accepted the offer while always refusing to admit that the Council was competent to adjudicate in the case. But at the end of 1948, fighting again commenced between the Dutch troops and the Indonesians. See further under *INDONESIA*; *JAVA*.

A Conference of Belgian, Netherlands and Luxembourg ministers was held at The Hague, April 17-18, 1948 to discuss economic questions affecting those countries and on April 18 it was announced

that they had decided to complete at once the common customs tariff contemplated by the Customs Convention concluded in London on Sept. 15, 1944, to bring the Customs Union into being before the end of 1948 and to prepare the technical arrangements for the final abolition before the end of 1947 of the collection of customs duties at the common frontier of H., and the Belgo-Luxembourg Union (see *BENELUX*).

As the outcome of negotiations in London and The Hague (Dec. 1947-Feb. 1948) an Anglo-Dutch trade and financial agreement was signed on Feb. 27. This was followed in July 1948 by a cultural agreement, covering a wide field of intellectual, artistic and scientific exchanges.

On the occasion of the national celebrations in honour of the fiftieth year of her reign and of her sixty-eighth birthday, which fell on Aug. 31 1948, Queen Wilhelmina on Aug. 30 resumed for a period of one week the royal authority which she had relinquished the previous May in favour of her daughter, Princess Juliana, who had since then acted as Princess Regent. On Sept. 4 Queen Wilhelmina formally signed an Act of Abdication at the Royal Palace, Amsterdam, in which she declared that she had 'completely voluntarily and irrevocably' abdicated all her royal dignities and prerogatives and transferred them to her daughter, Queen Juliana, the fifth monarch of the Netherlands and of the Royal House of Orange-Nassau, who was formally inaugurated on Sept. 6 in the Nieuwe Kerk in Amsterdam. Queen Wilhelmina after abdication took the title of Princess of the Netherlands, living in complete retirement.

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Holland, city in Ottawa co., Michigan, on the S. bank of the Black R., 25 m. S W of Grand Rapids. It is the seat of Hope College (1867), and of the W. Theological Seminary. The tn. was founded by Dutch settlers in 1817, and received its charter in 1867. The pop., in which the Dutch element predominates is 13,000.

Holland, coarse variety of linen, unbleached, and often dyed brown. Its texture is strong and it washes very well. It was formerly fine linen manufactured in the Netherlands; hence its name.

Holland House, historic London residence, between Kensington Road and Crayford Road, Kensington, property of the earl of Chester, heir of the Fox family. In the Jacobean style, its centre building and turrets were built about 1608-10 by Sir Walter Cope. At the time of the third Lord Holland (1800-15) it was a social and political centre of the Whig Party. Its circle included Fox, Sidney Smith and Macaulay.

Holland Park, dist. of W. London, between Kensington and Notting Hill. In H. P. Road is Leighton House, the property of the nation.

Holland, New, seaport in the estuary of the Humber, Lincolnshire, England. There are docks, and a steam ferry to Hull, which is opposite.

Holland, North, prov. of the Netherlands, comprising the peninsula between the Zuyder Zee and the N. Sea and the is on the N. side, and bounded on the S. by the prov. of S. H. and Utrecht. Area 1150 sq. m. The inhabs are chiefly engaged in cattle-raising, agriculture and gardening. There is considerable trade in dairy produce, and linen is manufactured in the tns. Much of the land is below sea level, and there are sev. canals, notably the N. Holland Canal and the N. Sea Canal. The chief tns are Haarlem (cap.) and Amsterdam. Pop. 1,646,000.

Holland, Parts of, administrative div. of Lincolnshire, which includes most of the fens in the S.E. Area 268,992 ac. Pop. 102,300.

Holland, South, prov. of the Netherlands, bounded on the N. by N. Holland, on the E. by Utrecht and N. Brabant, on the S. by Zealand, and on the W. by the N. Sea. Area 1166 sq. m. The chief industry is agriculture and there is considerable shipping trade. The chief tns are Rotterdam (cap.), The Hague, Dordrecht and Leyden. Pop. 2,256,400.

Holland-America Line, shipping line, estab. at Rotterdam in 1873, which maintains a regular passenger and freight service between Holland, Great Britain, and

the U.S.A.; also between the U.S.A. and the Dutch East Indies. The flagship of the fleet is S.S. *Nieuw Amsterdam*, 36,667 tons.



H. Kumpke

THE VOORSTRAATSHAVEN  
DORDRECHT, SOUTH HOLLAND

Hollander, Bernard (1864-1934) physician, b. in Vienna; came to England, 1881, and was naturalised as a Brit. subject in 1899. Attempted to formulate a scientific phrenology; was medical officer under the Mental Deficiency Act, for the co. of London; wrote treatises on the brain, insanity and crime.

Hollands, see GIN.

Hollar, Wenceslaus or Wenzel (1607-1677), Bohemian etcher, b. at Prague, and d. in London. He studied at Frankfurt, Strasburg, and Cologne, and in the last-named city attracted the notice of the earl of Arundel, who brought him to England (1637). During the Civil war he took refuge for eight years in Antwerp but afterwards returned to London. He worked with unceasing industry for his publishers, who took advantage of his poverty and his ignorance of the country to underpay him. He illustrated Ogilvy's *Homer* and *Fergil*, made etchings of the works of Holbein, Titian, and Van Dyck, and executed some beautiful 'Views of London.' See study by Parthey (1853-1858), with catalogue of his plates.

Hollerith, mechanical calculating method, see under ELECTRIC ACCOUNTING MACHINE.

Holles, Denzil, Lord (1599-1680), Eng. statesman, is conspicuous among a host of good and true men, and, at a time which

was politically a period of *Sturm und Drang*, for his public spirit and his single and high-minded aims. An aristocrat by birth, he was always a staunch Whig in principle, and accordingly averse from Cromwell and his rough-riding over time-hallowed institutions. As member of Parliament he supported the impeachment of Buckingham (1627), forcibly held the speaker in his chair till Sir John Elliot's protestations were passed (1629), assisted in the impeachment of Laud (1641), endeavoured to impeach Cromwell as an incendiary (1644), and tried to compass the dissolution of the parl. troops (1647). Thus, as a Presbyterian and a moderate, he bravely spoke for freedom; in 1639 he suffered a year's imprisonment, and in 1649 only escaped formal expulsion by Col. Pride by fleeing to France. After the Restoration he served King Charles.

Holles, Thomas Pelham, see NEWCASTLE, DUKE OF.

Holleschau, tn. 40 m. E.N.E. of Brno, Moravia, Czechoslovakia. The chief industry is in cloth and linen. Pop. 6000.

Hollingshead, Raphael, see HOLMESHEAD.

Holloway, dist., par. of Islington, N. London, England. The old Copenhagen Fields have been occupied by the cattle mkt. since 1855. At the N. end of Camden Road is the City Prison (for women), a castellated edifice of 1850. Pop. (Upper H.) 36,000, (Lower H.) 10,000.

Holloway College, The Royal, situated at Mt. Lee, Egham, Surrey, England. It was founded in 1883 by Thomas Holloway (q.v.), the proprietor of the noted pills and ointment. Its object is to supply a suitable education for women of the middle class. The students are prepared for univ. degrees and must read for honours. The building, which is constructed in the style of the Fr. Renaissance, was opened by Queen Victoria in 1886, and contains a fine collection of paintings by Constable, Landseer, Millais, Frith, and other famous artists.

Holloway, Thomas (1800-83), Eng. ointment-and-pill vendor; b. at Plymouth Dock (Devonport); son of a baker, afterwards landlord of the Turk's Head Penzance. After his father's death, he kept a grocery; removed to London about 1828. In 1837, he began to advertise an ointment, and made over half a million sterling by unprecedentedly lavish advertising. Founded Holloway College, Egham.

Holly, or *Ilex aquifolium*, species of Aquifoliaceae, found very commonly in Britain. It is cultivated both as an ornamental evergreen tree and as a hedge-plant on account of its dense and prickly foliage. The timber is fine-grained, heavy and compact, and is valued by both the turner and the mathematical instrument maker; the flowers are small and white; the berries are scarlet and glossy, giving the plant a brilliant appearance in late autumn. They are very poisonous, producing purgative and violent emetic effects.

Hollyhock, popular name for the species of Malvaceae, known botanically as *Althaea rosea*, a near ally of the marsh-mallow.

It is a hardy perennial, herbaceous in habit, and is frequently cultivated in Britain especially in the gardens of country cottages.

Hollywood, dist. in the city of Los Angeles, California, U.S.A., situated amidst beautiful surroundings and with an ideal climate, famous as the headquarters of the Amer. film industry, its chief buildings being the film studios. H. has injured the Amer. stage by depriving it of its mkt. outside New York and attracting to itself much of the best writing, acting, directing, and organising talent; while the Amer. vaudeville has also suffered by its failure to cope with the competition of the screen. Over two-thirds (2 billion dollars) of the cinema investment of the world is in the U.S.A. and nearly two-thirds of the world's films are made in H., while it requires a rigorous system of quotas, prohibitions, subsidies and publicity campaigns to keep other countries from being even more dependent on the H. film industry than they are. Nearby is Culver City, also a suburb of Los Angeles and a centre of the Amer. film industry.

Holman, James (1786-1857), 'The Blind Traveller', native of Exeter. Being compelled through total loss of sight to quit the navy, he travelled alone through the greater portion of Europe (1819-24) and round the world (1827-32). He pub. interesting journals of his travels.

Holmby House, more correctly Holdenby House, 6½ m. N.W. of Northampton, a Tudor mansion of which Sir Christopher Hatton was the architect. It was bought by James I., and Charles I. was imprisoned here for four months in 1647. In 1652 it was dismantled.

Holmes, Sir Charles John (1868-1936), Eng. landscape painter; b. at Preston; eldest son of Rev. Charles Rivington H., of Stratton, Cornwall. Educated at St. Edmund's Canterbury, Eton, and Brasenose College, Oxford. His works are in many art-galleries, and in the Ashmolean, Fitzwilliam, Brit. and Victoria-and-Albert Museums; National Gallery of Brit. Art ('the Burning Kiln'). Kt., 1926; K.C.V.O. 1928. Ed. *Burlington Magazine* (1903-09); Slade prof. of Fine Art, Oxon. 1901-10; director National Gallery, 1916-28. Pub. *Constable* (1902), *Notes on the Science of Picture-Making* (1909), *The National Gallery* (1923-27).

Holmes, Nathaniel (1815-1901), Amer. jurist and author, b. at Peterboro', N.H.; graduated at Harvard, and was judge of Missouri Supreme Court (1865-68). From 1868-73 he was prof. of Law at Harvard. He wrote extensively on the Shakespearean question. In *The Authorship of Shakespeare* (1875) he credits Bacon with the dramas.

Holmes, Oliver Wendell (1809-94), Amer. poet and essayist, b. at Cambridge, Massachusetts. He graduated at Harvard Univ. in 1829, studied medicine for two years in Paris, and took his M.D. degree in Cambridge, Massachusetts (1836). He continued to practise as a doctor till 1849, and from 1847 till 1882 lectured at Harvard on anatomy and wrote essays on

homeopathy, etc., which were conspicuous for their vivacity, unflinching freshness, and humanity. Collaborated with James Russell Lowell in the issue of a new magazine, the *Atlantic Monthly* (1857). To this he contributed *The Autocrat of the Breakfast Table* (1858), a book of sweet and guileless merriment and informed with the spirit of New England. There followed *The Professor at the Breakfast Table* (1860) and *The Poet at the Breakfast Table* (1872).



OLIVER WENDELL HOLMES (1809-94)

In these is displayed the best of his prose and poetry. His novels the best of which are *Elsie Venner* (1861) and *The Guardian Angel* (1867) though they have been described as merely monologues of himself, tell, in the most intimate and charming manner the New England life of the day, and likewise the author's gift for picturesque description and the elasticity and force of his temperament. His *Life of Emerson* appeared in 1883. From boyhood he enjoyed all the blessings of good fellowship and fortune. See J. T. Morse, *Life and Letters of Oliver Wendell Holmes*, 1896, also studies by W. H. Schroeder, 1909, S. M. Crothers, 1910 and Catherine D. Bowen, *Yankee from Olympus*, 1918.

Holmes, Oliver Wendell (1841-1935), son of the famous author of the same name, b. at Boston, Mass., U.S.A. Graduated from Harvard Univ. and, as a youth, was serving during the Civil war with the 20th Massachusetts Volunteers, rising to the rank of lieutenant-col. He was retired with the rank of captain, was admitted to the Bar in Massachusetts in 1867, and started the practice of his profession in Boston. In 1870-71 he became instructor in constitutional law at Harvard, and was professor of law there in 1882. He was associate justice 1882-99 and chief justice 1899-1902 of the Supreme Court of his state. In 1902 he was made an associate justice of the U.S. Supreme Court. As such he

became famous for his dissenting judgments, which were almost invariably supported by his colleague, Justice Brandeis. In 1931 many of these famous dissenting opinions, constituting a sort of American magna charta or real democracy, were ed. in book form by Prof. Felix Frankfurter of the legal faculty of Harvard Univ. His masterpieces in legal literature were the 12th ed. of Kent's *Commentaries* (1873), and *The Common Law* (his Lowell Lectures, 1881). See F. Frankfurter, *Mr. Justice Holmes and the Constitution*, 1927; also Catherine D. Bowen, *Yankee From Olympus*, 1948.

Holmfirth, tn., 6 m. S. of Huddersfield, W. Riding, Yorkshire, England. There are cloth and wool mills and stone quarries. The Bilberry reservoir here burst in 1852; eighty-one people were drowned and much damage to property was done. Pop. 1) 100.

Holmium, chemical element of atomic number 67 and atomic weight 163.5, its symbol is Ho. It is a member of the group of rare-earth metals and occurs in gadolinite, euxenite, polycrase and other minerals. It was discovered in 1878-79 by P. T. Cleve and J. L. Soret, independently of each other.

Holm Oak, *Quercus Ilex*, shrub like tree of the natural order Fagaceae (beeches and oaks) with holly-like leaves. Found in Mediterranean countries, yields a useful timber, and its bark is used for tanning. In Britain it occurs as an ornamental evergreen bush 20 to 30 ft. high.

Holm Thrush, see MISKITT THRUSH.

Holocephali, see under CHIMERA.

Holofernes, called in Judith II 4, 'the chief captain of the army of Nebuchadnezzar'. The book of Judith (apocryphal) tells the story of how the Jewish maiden saved her nation by assassinating H. before the walls of Bethulia, i.e. Jerusalem. The story is a legendary one, and it is quite evident that H. cannot be connected with the historical accounts of Nebuchadnezzar's reign. His identification is extremely difficult, a large number of suggestions having been made. Many would connect him with Croesus, who in 548 B.C. was king of the Cappadocians.

Holograph, in Scottish law, a H. deed or will is one written wholly in the grantor's own hand. Such an instrument is admissible in evidence without proof of attestation, because it is unquestionably the strongest proof and a document least capable of imitation. But the presumption of authenticity may, of course, be rebutted by proof to the contrary. H. deeds bind the grantor as effectually as if executed with the statutory solemnities essential to other deeds, but such effect endures only for twenty years. Deeds in which all the material parts are in the grantor's handwriting, or in which what is not in his handwriting is by the deed formally adopted by the grantor, have the same effect as H. deeds. H. wills, even if unattested, are presumed to have been executed at the date upon which they are expressed to have been made, but it is otherwise with H. deeds. See J. Erskine, *Principles of the Law of Scotland*, 1754.

**Holothurian** (Gk. ὅλος, whole, and θύρα, like a door), name given to any individual of Holothuroidea, a class of Echinodermata commonly called the sea-cucumbers. It is an elongated, worm-like animal with a ring of about twenty large retractile tentacles surrounding the mouth; these tentacles are modified tube-feet, and contain an extension of the water-vascular system. The ambulacral feet are furnished with a suctorial disc, and the ambulatory papillae are pointed at the ends, with elementary or no calcareous plates. The water-vascular system consists of a circular vessel with two appendages, the polian vesicle and the stone canal, and five radial vessels. Holothuroidea are divided into two orders, Actinopoda, in which tentacles are always present but feet and papillae may be absent, and Paractinopoda, in which tube-feet, ambulacral papillae, respiratory trees and curvierian organs are absent. The former contains the family Holothuriidae, with the Brit. genus *Holothuria*; Syngnathidae, whose species have a flattened body; Elasmobranchii, with a more or less ventral mouth and elongated body; Pelagothuridae, pelagic forms with a cylindrical body; Molpadidae, burrowers in mud or clay; Cucumariidae, with the familiar Brit. genera *Cucumaria*, *Thyon*, *Psolus*, and *Phyllophorus*. The order Paractinopoda contains the single family Synaptidae, whose typical genus *Synapta* is known on Brit. coasts, *S. inhaerens* and *S. digitata* being the commonest species.

**Holroyd, Sir Charles** (1861-1917), Eng. painter-etcher; b. at Leeds; eldest son of Wm. H., merchant. Educated: Leeds Grammar School; Yorkshire College of Science; Slade School, London—assistant teacher 1885-89. Fellow, Society of Painter-Etchers, 1885. In Italy with travelling scholarship, 1889-91. Sent seven pictures to Royal Academy, 1885-1895. His etchings are much better than his pictures. He also executed some portrait-etchings and excellent drawings of trees. First keeper, National Gallery of Brit. Art, 1897-1906. Director, National Gallery, 1906-16. Knighted 1903.

**Holroyd, John Baker**, see SHEFFIELD, EARL OF.

**Holst Gustav Theodore** (1874-1934), Eng. composer, b. at Cheltenham, of Swedish extraction on his father's side. Like his father, he was an organist, and he early became choirmaster in Gloucestershire, where he laid the foundations of his skill in choral effect. In 1895 he obtained a scholarship at the Royal College of Music, learning under Stanford and Sharpe. Three years later he decided to earn his living as a trombonist, and so acquire experience of the orchestra from the inside. In 1903 he was music master at Edward Alleyn School, at Morley College in 1907, and later worked in a similar capacity at other well-known colleges. He had to wait long for recognition. His chief works are *The Planets* (1915-16), orchestral suite; *Hymn to Jesus* (1917), choral; *Ode to Death* (1919), choral work produced at the Leeds Festival in 1921; *The Perfect Fool*, an opera, produced at Covent

Garden by the Brit. National Opera Company, in 1923; and *At the Boar's Head* (1925), a Shakespearean opera, in which he aimed at making Falstaff move to genuine folk-tunes. In the same year he was producing his *Choral Symphony*—to words by Keats; and, in 1928, his music for John Massfield's mystery-play, *The Coming of Christ*. See monograph by C. B. M. Dyer, 1931 and Imogen Holst, 1938.

**Holst, Hermann Eduard von** (1841-1904), Ger. historical writer, b. in Fellin, Livonia. He became prof. of hist. at the Univ. of Strasburg and later of Freiburg. From 1892-99 he was prof. of hist. at Chicago Univ. His books include *Constitutional and Political History of the U.S.A.* (1873-91), and *French Revolution Tested by Mirabeau's Career* (1894).

**Holstein**, see SCHLESWIG-HOLSTEIN.  
**Holston**, riv. of the United States. Rising with two branches in S.W. Virginia. It flows with a S.W. course into the N.E. of Tennessee, where the forks unite at Kingston. At a spot some 4 m. E. of Knoxville is the confluence of this riv. with the Fr. Broad, after which their united streams are called the Tennessee. Length 350 m.

**Holsworthy**, urban dist. and mrkt. tn. of Devon, England, 46 m. from Exeter. An ann. horse fair is held there in the summer. In the first quarter of last century a canal was made connecting it with Bude, but the canal has long fallen into disuse. Pop. 1500.

**Holt**: (1) Mrkt. tn., 9 m. W. by S. of Cromer, in Norfolk, England. Here is Gresham's School founded in 1555, with endowments managed by the Fishmongers Company. Pop. 2500. (2) Vill. on the Dec. 5 m. E.N.E. of Wrexham in Denbighshire, Wales. Pop. 1200.

**Holt, Sir John** (1642-1710), a lord chief justice of England, seems to have sown his wild oats at Oriel College, Oxford. Called to the Bar in 1663, he appeared as counsel for the defence in a series of state trials, and William III. rewarded his ability and zeal by making him lord chief justice (1689). He was noted in court for his courtesy towards prisoners, his aloofness from all party prejudice, and his exceptional moral courage.

**Holthby, Winifred** (1898-1935), Eng. novelist; educated at Queen Margaret's school, Scarborough and Somerville College, Oxford. Director *Time and Tide*, 1926. Author of the novels *Anderby Wold* (1923), *The Crowded Street* (1924), *The Land of Green Ginger* (1927), *Poor Caroline* (1931), *Mandao Mandao* (1933), *Truth is not Sober* (1934), *Take What You Want* (U.S. title, *South Island*) (1936), awarded the James Black Prize), *Pavelements at Anderby* (1937); Pamphlets: *Kutuchus or The Future of the Pulpit* (1928), *Criticism* (1930), and *Virginia Woolf: a critical study* (1932).

**Holst, Karl Eduard von** (1798-1880), Ger. actor and author, was a man of versatile talent and varied experience. Having volunteered in the Prussian army and studied law in Breslau, he became an actor, and appeared as Mortimer in Schiller's *Maria Stuart*. His popular

vaudeville *Die Wiener in Berlin* was produced in 1824, and his successful play *Lenore* in 1829. Meanwhile, he toured with theatrical companies at home and abroad, conducted theatres at Vienna and Riga, and won golden opinions by truly dramatic recitals from Shakespeare and his own poems. These latter reveal his natural gift for lyrical outpouring; his *Schlesische Gedichte* (1830) had reached their twentieth ed. in 1893. H. left behind him three novels and eight vols. of fascinating autobiography (1843-50).

Holtzendorff, Henning von (1853-1919), Ger. admiral; b. in Berlin; son of Otto von H., vice-president of the Court of Appeal. His early naval life was spent chiefly in Far E.: he attained flag-rank in 1905; vice-admiral, 1907; admiral, 1910—in command of Grand Fleet. Retired from sea-duties, 1913; in Sept. 1915, chief of Naval Staff. Gave orders for 'unlimited' U-boat warfare, Dec. 22, 1916. Relieved of office on account of ill health, July, 1918.

Holtzendorff, Joachim Wilhelm Franz Philipp von (1829-89), Ger. criminologist, attended the univs. of Bonn and Heidelberg, and finally graduated in law at Berlin (1852). Privat docent in 1857, he was three years later appointed prof. extraordinary, but his advanced and enlightened political opinions long hindered his preferment. In 1873, however, he became head of the faculty of jurisprudence at Munich Univ. and held this chair until his death. An authority on criminal law, he is esteemed also as the editor of many invaluable legal compendia, to wit, *Handbuch des deutschen Strafrechts* (1871-1877) and *Handbuch des Völkerrechts auf Grundlage europäischer Staatspraxis* (1885-1890), and as the author of a series of independent treatises, such as *Die Prinzipien der Politik* (1889).

Holtzmann, Heinrich Julius (1832-1910), Ger. theologian, son of the eminent philologist, Adolf H., prof. of theology at Heidelberg from 1861 to 1874, he afterwards accepted the same chair at the univ. of Strasbourg. His reputation as a critic and scholar rests on his exegetical works on the N.T., and especially on the Johannine books (1890), the synoptic gospels (1889), and the Acts of the Apostles (1901). He upheld the theory that both Matthew and Luke based their narratives on that of Mark. At first somewhat conservative of older theories, he later became a leading representative of the advanced and modern school. Another of his critical publs. was the *Lehrbuch der protestantischen Theologie* (1897).

Holub, Emil (1847-1902), African traveller, b. at Hottitz, Bohemia. He took his M.D. degree at Prague Univ., and went out to S. Africa in 1872. He travelled over various parts of the country, collecting valuable natural hist. specimens. His books are: *Die Kolonisation Afrikas* (1881-82), *Stehen Jahre in Südafrika, 1872-79* (1881, Eng. trans. 1881), and *Von der Kapstadt ins Land der Maschukulumbé* (1888-90).

Holy Alliance, league ratified at Paris in 1816 after the downfall of Napoleon.

Alexander I. of Russia and the sovereigns of Austria and Prussia made a solemn covenant that in all matters both of domestic and foreign policy, they would be guided by the principles of Christian ethics. The main issue of the alliance, one of whose first aims was the preservation of peace, was, ironically enough, the suppression of the popular movement for freedom and equality, which was at that time a growing menace to royal prerogative and despotism in every W. nation. The league, which was discountenanced in this country as an insidious check on true liberty, soon died a natural death. At the time of its formation, Alexander was under the sway of Madame de Krüdener, the mystic.

Holy Coat of Trèves, famous relic of the eleventh-century cathedral of SS. Peter and Helena in Trèves, Rhenish Prussia. Legend says that it was brought by the Empress Helena from Palestine, but the first reference to it is on a tablet dating from the sixth century. It is reputed to be the 'seamless coat' of Christ, but is now little more than 'connected fragmentary particles' of cloth. In 1512 the pope sanctioned its exhibition once in seven years, and ever since it has been a source of income to the church. This relic, like others, is believed to work miracles, and in 1891, when it was on view for the first time since 1844, was the object of pilgrimage for almost two million people.

Holycross, par. and vil., co. Tipperary, Ireland, 20 m. N.W. of Tipperary; much visited for its magnificent ruins of a Cistercian abbey. The dist. is very fertile and there are good pastures. Pop. 1000.

Holy Cross Mountain, peak, 14,000 ft. in height, of the Sangre de Cristo range and branch of the Rockies, Colorado, U.S.A., in Eagle co., 15 m. N.W. of Leadville. Its name is taken from two huge snow-filled ravines which have the appearance of a cross.

Holy Ghost, see HOLY SPIRIT.

Holy Grail, The, see GRAIL, HOLY.

Holyhead, seaport and mkt. tn. on Holy Is., Anglesey, N. Wales. It is the most important mail-packet station for Ireland and is the starting point of the L.M.S. steamers for Dublin and Greenore. It has extensive railway and steam-boat traffic. It possesses a fine harbour, with an area of 267 acs., begun in 1846 and finished in 1873, and a breakwater 1½ m. long. This refuge is extended by 400 ac. of roadstead. There are a wireless station and a fine old embattled church (St. Cybi). Pop. 10,700. (See illustration p. 202.)

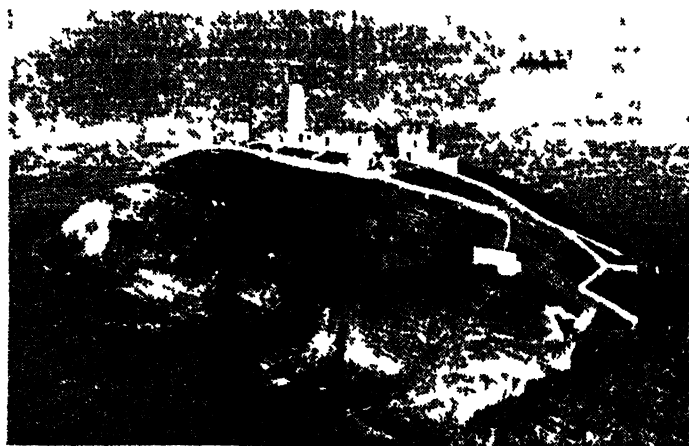
Holy Island (1) (auct. *Lindisfarne*), is off the coast of Northumberland, England, connected with the mainland at low tide. It is 3 m. long and 1½ m. broad. The N. part is mostly sandy but the rest is fertile. It is chiefly noted for its ruins of sacred edifices. St. Aidan founded here a priory in 631 with which later St. Cuthbert was connected. This was destroyed in 893 and in 1093 its remaining materials were used to build a Benedictine priory. There is also a sixteenth century castle the property of the National Trust. The

is, was sev times ravaged by the Danes, and this, added to the increasing importance of the see of Durham caused it to be ultimately abandoned. To the S W is a small fishing vil with harbour. Area 1050 acs Pop 586 (2) Rocky is off the E coast of Arran rising steeply in the firth of Clyde Scotland, it has a light house (3) Or Holyhead is rocky and barren is 8 m long by 3½ m broad, W of Anglesey N Wales separated from it by a sandy causeway Tro Arddur on Penrhos Bay is a seaside resort

Holy Land, see PALESTINE

Holyoake, George Jacob (1917-1906), agitator the son of a Birmingham

'the most holy place,' contained the Ark of the Covenant and the 'mercy seat, and was separated by a veil from the outer chamber, 'the holy place. It was, in deed, Jahveh's throne he appeared there attended by adoring Cherubim, and there the High Priest on the Day of Atonement presented the blood by which the Sins of the nation were 'covered up' or 'wiped away'. In reading in *Exodus* the minute and elaborate descriptions of priestly narrative when describing this wilderness tent sanctuary and all that appertains to it, with the mathematical symmetry of its arrangements and the fine gradations of sanctity it is in



SOUTH STACK LIGHTHOUSE HOLYHEAD

From the sea

engineer was very early in life inspired with notions of reform and at the age of fifteen became a Chartist. He was a workman until 1810 when he became a teacher of the Owenite movement at Worcester. Later he went about the country lecturing and having decided that the exigencies of Christianity were insufficient he made remarks in public for which he was charged with blasphemy and imprisoned for six months. Subsequently his energies were mainly devoted to social reform and the persistent advocacy of co-operation. He wrote a *History of Co-operation in England* (1871) and biographies of Tom Paine, Richard Carlisle, Robert Owen and John Stuart Mill, as well as many pamphlets on controversial subjects. His autobiography is entitled *Sixty Years of an Agitator's Life* (1892). See C. W. Gosse, *A Descriptive Bibliography of the Writings of G. J. Holyoake* 1908 and J. McCabe *The Life and Letters of Holyoake*, 1908.

Holy of Holies, inner chamber of the Jewish tabernacle (Ex xxvi), and of Solomon's Temple (1. Kings vi). It was

possible not to recognise how greatly the picture has been influenced by certain dominant religious ideas. The unapproachable majesty of Jahveh's holiness and beauty of his attributes are reflected in the arrangements of his earthly sanctuary. By ascending stairs of sanctity—through out holy place and holy of holies corresponding to laymen, priests, and High Priest—the central shrine of holiness is reached. All this has naturally lent itself to an elaborate development of religious symbolism from early to modern times and has also exercised a profound influence on the religious symbolism of certain parts of the N.T. These considerations help to explain the relation of the priestly description of the sanctuary to historical fact for the priestly writers did not make it their aim to present history as it was but to substantiate traditions and often to supplement them under the dominance of religious ideas (McNelis). Priestly narrative, in fact, presents an *ideal tabernacle*, in which the developed institutions of a later age are reflected in a mosaic environment with



the necessary modifications; and to judge the authors of such writings by the canons of modern historical science is misconceived and unjust.

**Holyoke**, city on the r. b. of the Connecticut R., 8 m. N. of Springfield in Hampden co., Massachusetts, U.S.A. An insignificant vil. till 1849, it rapidly became a thriving industrial centre when a huge dam was constructed so as to utilize the power of Hadley Falls on the Connecticut R.; a second and larger dam was built in 1900. The first tn. in America to manuf. paper, H. is noted also for its cotton goods and silk mills. Many other manufs. are carried on on a large scale, the prin. being blanket, felt and braid factories, boilers, trucks, tyres and tobacco. Pop. 57,000.

**Holy Orders**, see **ORDINATION**.

**Holy Places**, localities in and close to Jerusalem associated with the life of Christ. They include the church of the Holy Sepulchre (see **SEPULCHRE**, **CHURCH OF THE HOLY**); Bethlehem, whose outstanding monument is the Basilica of the Nativity, shared by sev. communities. Orthodox, Lat. Armenian, Jacobite, Abyssinian and Coptic; the Garden of Gethsemane, belonging, in shares, to the Franciscans, the Orthodox Patriarchate of Jerusalem, the Russians, and the Armenians; and other sacred sites on Olivet or the M. of Olives such as the fifth-century octagonal church of the Ascension. The Pope entrusted the custody of the H. P. in 1230 to the Franciscans and later this custody passed to France, the position, however, being complicated by the fact that the Turkish sultan was in possession of the Holy Land. Difficulties over the custody as between France and Russia, representing respectively W. and E. Christianity was one contributory factor to the outbreak of the Crimean war. Under Art. 13 of the Mandate for Palestine granted by the League of Nations to Great Britain all responsibility in connection with the H. P. and religious buildings or sites in Palestine, including that of preserving existing rights and securing free access, and the free exercise of worship, while ensuring public order and decorum, was assumed by the mandatory, who was, under the Mandate, made responsible solely to the League of Nations in all matters connected with the mandatory obligations. The mandatory, however, was empowered to arrange with the Palestine administration for carrying the provisions of this Article of the Mandate into effect. The same Article also provided that nothing in the Mandate might be construed as giving the mandatory authority to interfere with the fabric of purely Muslim sacred shrines. Under Article 14 of the Mandate the mandatory was enjoined to appoint a Commission to define and determine the rights and claims in connection with the H. P. and the rights and claims relating to the different religious communities in Palestine. The council of the League was to give its approval to both the composition of the Commission and the performance of

its functions. The duties of the former Mandatory have now passed to the United Nations (see **further under PALESTINE**).

**Holy Roman Empire**. This name is usually applied to the empire founded by Charles the Great in the year 800, and which was regarded as the revival of the W. Rom. empire. It did not include all the ter. of the latter organisation, but nevertheless it typified the ideal. The W. Rom. empire had come to an end in 476, when Odoacer had finally taken possession of Italy, and had signified to Zeno, the ruler of the E. empire, that henceforth he alone should rule as emperor of a Rom. empire, and he, Odoacer, should rule as patrician and, in all but name, king of Italy. Since those days the face of Europe had changed considerably. Odoacer had been deposed, exalted, and succeeded by Theodoric, the leader of the Ostrogoths; and the death of the latter (526) had witnessed the break up of the power of the Ostrogoths, and for a time Italy became the scene of constant wars. Justinian and his great general, Belisarius, had conquered much of Italy, but had usually been held in check, and then the N. part of the peninsula passed into the hands of the Longobards (Lombards). In another part of W. Europe the power of the Franks had been constantly on the increase. The line of Clovis had passed away with the last of the *rois fainçants*, the Mayors of the Palace had usurped the kingly powers, and finally, in 752, the greatest of the Mayors of the Palace, Charles Martel, had held in check the inroad of the Saracens, and had, according to one great authority, saved W. Europe for Christianity. The victory at Poitiers, according to Gibbon, prevented the Moslem from establishing his faith to the uttermost isles of the W. Charles Martel also helped the papacy in the struggle against the Lombards, and commenced the long alliance of Carolings and papacy. In the meantime the growth of the power of the bishops of Rome had been equally great. By the beginning of the eighth century the papacy had declared itself the spiritual head of the world, and had prepared the way for that union of the spiritual and temporal power which was to rule the world, acknowledged by all.

The accession of Charles the Great in 768 marks the beginning of the closer unity of papacy and empire. Twice Charles the Great crossed the Alps to rescue the papacy from the clutches of the Lombards. Finally, during his second expedition, he wrested for himself the Iron crown of Lombardy. Henceforth the papacy was to be protected by its most helpful ally. The gratitude of the pope was speedily seen: as Charles knelt in prayer in the great church of St. Peter's on Christmas Day in the year 800, he was saluted and crowned by the pope as emperor. Henceforth the Middle Ages were to be practically one long quarrel between the nominal heads of Christendom. Had Charles foreseen the results of his coronation by the pope, and the claims which the later successors to the chair of St. Peter founded on it, he

probably would have, as in later days Napoleon did, crowned himself. The arrogant pretensions of the later papacy were based on the fact that the pope had raised a mere king to the empire.

It must be borne in mind particularly that, as H. W. C. Davis points out in his *Medieval Europe*, the Carolingian empire was based upon the model not of Augustus but of Constantine, from whose forged donation the papacy claimed for itself all the power of the W. empire. The empire did not, save as an ideal, outlive its founder. The reign of his son witnessed the beginning of the end, and the treaty of Verdun (843) estab. a potential France, Germany, and Italy. Only once again, under Charles the Fat (841-887), were the three portions of the empire of Charles the Great united. The later Carolings were as weak as the *rois fainçants*, and the invasions of the Norsemen gave greater power to the local nobility, and this was aided by the rise of feudalism. In Germany the power concentrated in five great duchies, Saxony, Swabia, Franconia, Bavaria, and Lotharingia. In 918 the dukes refused to recognise the Caroling line, and elected Henry the Fowler of Saxony as king. The Carolings continued in France until 987, when they were superseded by the Capetian line. The year 918, although it does not seem to have affected contemporary historians to any great extent, marks the final separation of France from the empire. Henry the Fowler concentrated his attention upon extending towards the E., conciliating the other duchies, and preparing the way for his son Otto. The value of his work is seen best in the reign of his son Otto the Great (936-973). In Germany he put down two civil wars in the duchies, first giving them into the hands of his relatives, then seeking active alliance with the church to produce unity. His greatest success was the victory over the Huns on the Lechfeld (955) and his policy of 'Marks' (Marches) along the E. border. The alliance with the papacy led to the request to interfere in it, politics, which he did in 951 and 962. The second intervention led to his coronation as emperor of the W.

Otto regarded himself as the successor of Charles the Great, and appointed and deposed popes from 963 till his death. Otto II. (973-983) began to split the great duchies, but still extended towards the E. The ideal of Otto III. (983-1002) were more universal, and he wished to make Rome and not Aachen his centre. On the death of Henry II. (1002-21), the last of the Saxon house, the empire passed to the Salian house, the first emperor of which was Conrad (1024-1037), who concentrated upon ensuring the hereditary succession of his house. To this end he made feudal benefices hereditary in Germany and Italy. The reign of his son, Henry III. (1037-50), is usually regarded as the most glorious period of the medieval empire. Hungary, Poland, and Bohemia became fiefs of the empire. There was comparative peace, and the development of almost a national feeling in Germany.

During this period the papacy had been gradually developing its resources. In 918 there had been estab. the monastery of Cluny, whose members were now aiming at the purification of the church and its release from lay interference, and the exaltation of the papacy. Henry III. showed deep interest in their work, but in his actual relations with the papacy appointed and deposed popes. Henry IV. (1056-1106), in his struggle with the papacy, was faced with the 'noblest figure' in hist., Gregory VII. (Hildebrand). The papacy was exceptionally powerful, having for its support the Cluniacs, the Normans of S. Italy, Matilda, countess of Tuscany, and all discontented nobles in Germany. In 1075 Hildebrand at a synod formulated the claims of the papacy by stating that no lay prince must interfere with the election and investiture of clerics. Henry defied the pope, and the pope excommunicated the emperor, who at once found himself in great difficulties, because his nobles refused to recognise an excommunicated king. He was forced to cross the Alps, and in 1077 to undergo the dramatic humiliation at Canossa. But Hildebrand's severity defeated his own ends by alienating the Ger. princes, and in 1091 he was driven from Rome, and found a refuge in Apulia with the Normans. In the same year he died. Henry IV. was deposed by his son (1106), and also died in the same year. Henry V. (1106-25) concluded his phase of the struggle by the Concordat of Worms (1122). By this concordat the spiritualities were to be conferred by the papacy, whilst for the temporalities of the bishopric homage was to be done to the reigning prince (compare Anselm and Henry I., 1106).

After Lothair another dynastic change took place with the election of the Hohenstaufen candidate, Frederick I. (1152-90), who combined the claims of Salia and Saxon. He again was drawn into a long struggle with the papacy, whose ally now was a new organisation, the Lombard League, formed by the tns. of N. Italy. He was, however, defeated at Legnano (1176), and again an emperor made submission to a pope in 1177. But Frederick had succeeded in establishing a conditional supremacy over the important tns. of N. Italy. By the marriage of his son to Constance, heiress of the Norman dominions, it seemed that the dream of an empire from Sicily to the Baltic would be realised.

Henry VI. (1190-94) had greater promise than any previous emperor. The brevity of his reign, however, prevented any great developments, and his death left the throne to a child. The power of the papacy is well illustrated by the events of the next few years. Innocent III. took Constance and her son under the protection of the papacy, giving them the two Sicilies. The empire was granted to Otto IV. on condition of alliance with the papacy. Otto proved recalcitrant, and in 1211 the papacy offered the empire to the young Frederick. John of England allied himself with Otto, his nephew. Frederick found support in Philip Augustus,

and defeated the allied forces of John and Otto at Bouvines, a battle which influenced England, in that it led to the granting of Magna Charta; France, in that it removed fear of Eng. interference and helped the Capetian monarchy. In the last phase of the great medieval struggle, the cause of papal enmity seems to have lain chiefly in fear of the position of the emperor, Frederick II. who now held both Sicily and N. Italy. But with the death of Frederick the papacy gathered itself together for a final attack on the Hohenstaufen. His direct successor was 'the little Conradin,' but he did not gain election in Germany. Various candidates appeared, among whom were Alfonso of Castile, Richard of Cornwall, and Wm. of Holland. But none were actually recognised as emperor. Therefore the period from 1250-73 is known as the Great Interregnum, so that the death of Frederick II. marks the end of the great period of the medieval empire. In 1273 Rudolf of Hapsburg was elected emperor, but he never ruled over Italy. Henceforth the H. R. E. does not include Italy, and may to a very great extent be regarded as the personal and private possession of the house of Hapsburg.

Most of the later emperors were chosen from the house of Hapsburg, whose chief possessions were in Austria, acquiring Bohemia by marriage. In 1361 the granting of the Golden Bull by Charles IV., which settled the method of choosing the emperor, restricting the number of electors to seven, and naming them, lessened the power of the emperor in favour of the princes. During the fourteenth and fifteenth centuries, the elected emperor often paid more attention to his hereditary domains than to his imperial claims, because the empire was becoming so weak and poor. Therefore the emperor was chosen from the most powerful house, Austria, so that his private possessions would lend dignity to his position. During the sixteenth century, Maximilian added Burgundy to the possessions of Austria; his son, Charles V., held Spain, the Netherlands, Burgundy, Milan, the two Sicilies, Austria, Hungary, the Sp. dominions in S. America, and the empire. But the empire itself was purely Ger., and had little to do with affairs outside. The Reformation and the Counter Reformation, however, affected it greatly. There is no clear line of demarcation, and by the settlement of the peace of Augsburg, 1555, the two religions were placed on an equality, each state setting up its own religion (*cuius regio, eius religio*). Out of this unstable situation there developed the Thirty Years war, fought with the empire as a battleground. In 1648 the peace of Westphalia was concluded, Protestantism and Catholicism were put on a level again, but the empire was ruined by the war. From this time Germany was a mere lax confederation of petty despotisms and oligarchies; Switzerland received its independence, as did also the Netherlands. Sweden and France received theirs within the empire. There could be no national feeling in such circumstances; the power

of the emperor had departed, and interest must centre in the rising power of Prussia and its rivalry with Austria, shown especially in the wars from 1740 to 1763, in which Frederick opposed Maria Theresa.

But as a result of the world schemes of Napoleon Bonaparte the empire found itself in grave difficulties. First the Austrian Netherlands and all Germany W. of the Rhine were added to France. When Bonaparte in 1804 crowned himself emperor of the Fr., Francis II., who was emperor elect of the Romans, and king of Germany, changed his title to Hereditary Emperor of Austria. In 1805, at the treaty of Pressburg, he again changed it to emperor of Germany and Austria. Many of the Ger. princes now seceded from the empire, and formed themselves into a Confederation of the Rhine under the protection of Napoleon Bonaparte. In the same year, 1806, Francis resigned the empire; since then, there has been no other emperor of the H. R. E. See J. Bryce, *The Holy Roman Empire*, 1904; T. F. Tout, *The Empire and the Papacy*, 1906; J. Haller, *The Epochs of German History*, 1925; L. Ziegler, *Heiliges Reich des Deutschlands*, 2 vols., 1925; *Cambridge Medieval History* (1050-1485), vols 5-8, 1926-36; J. W. Thompson, *Feudal Germany*, 919-1190, 1928; H. Pinnow, *A History of Germany* (Everyman's Library), 1939; A. J. P. Taylor, *The Course of German History*, 1945.

Holyrood, name of the royal palace of the Scottish kings. David I. founded an abbey in Edinburgh (1128), and dedicated it to the Holy Rood or Cross with reference to the shape of a beautifully-wrought casket which Margaret, wife of Malcolm, the king, brought to Scotland in 1070. The monastery, which was built in the Norman and early Gothic styles, was dissolved in Henry VIII.'s reign, when the chapel became a par. church, until James II. (of England) made it a chapel royal (1687). Since 1768 it has been left a ruin. Begun by James IV. in 1501, the palace was a residence of the Scottish Kings till the Union, and is now open to the public, who are shown where Mary Stuart and Rizzio was murdered. Bonnie Prince Charlie danced in the picture gallery (1745). Robert Bruce convoked a parliament within the abbey precincts, and De Quincey once took refuge in the debtors' sanctuary.

Holy Sepulchre, Church of the, see SEPULCHRE.

Holy Spirit, The, or Holy Ghost, or Paraclete, in orthodox Christian theology, the Third Person in the Blessed Trinity. Foreshadowings of the Christian doctrine are found in certain parts of the O.T. writings, as, for instance in Gen. i. 2, 1 Sam. xvi. 13, and Joel ii. 28 ff., quoted as a prophecy of the descent of the H. S. at Pentecost in Acts ii. 17 ff. It becomes much clearer, however, in the N.T., where the H. S. is spoken of in a way that makes His Divinity distinct in such passages as 2 Cor. iii. 16 ff., 2 Tim. iii. 16, Gal. v. 22, etc. From other passages still more may be gathered. Matt. xxviii. 19 and 1 Pet. i. 1-14, speak of the H. S. as distinct from

the Father and the Son, while His Personality is insisted on in the important passage beginning John xiv. 16, as also in John xv. 26. 'But when the Comforter is come whom I will send unto you from the Father, even the Spirit of truth, which proceedeth from the Father, He shall testify of me.' In this text we have also a reference to the question of the Procession of the H. G., which caused such serious misunderstandings between the E. and W. churches in later centuries. The E. condemned the churches of the W. for the addition of the Filioque clause in the Nicene Creed, and they further denied that the procession of the H. S. was 'from the Father and the Son.' It must be pointed out, however, that there is probably no real doctrinal difference involved, as the W. has never held that this rather unfortunate addition to the Oecumenical Creed teaches a Dual Procession, but rather a procession from the Father through the Son. This doctrine E. theologians would endorse. Many questions relating to the H. S. are bound up with the controversies as to the Holy Trinity which occupied the mind of the church in post-Nicene times. The most important results, embodied in the Athanasian Creed and the additions to the Nicene Creed, lay stress on the personality of the H. S. See H. Swete's article in the *Dictionary of Christian Biography*, 1877, and the same writer's *Holy Spirit in the New Testament*, 1909, and *Holy Spirit in the Ancient Church*, 1912, also any systematic works on Christian theology.

**Holytown**, tn., Lanarkshire, Scotland, 14 m. N.N.E. of Lanark. Situated in the most productive region of the Lanarkshire mineral deposits, its coal mines and steel works are valuable. Pop. 13,000.

**Holy Water**, water blessed by the bishop or priest for ceremonial purposes. Water is naturally used as a symbol of spiritual cleansing, and that the habit of using H. W. was common very early in the Christian church we are told by Tertullian. In the Rom. Catholic Church there is a solemn blessing of H. W. on Saturday in Holy Week; this water, for the blessing of which special ceremonies are used, is called Easter Water, but the blessing of water by a simpler rite may be performed by the priest at any time. Stoups with H. W. stand at the entrance to Rom. Catholic churches, and before High Mass the priest sprinkles the congregation with blessed water. It is also used at funerals, in blessings, etc. Salt is mixed with the water when it is blessed.

**Holy Week**, week immediately preceding Easter in which the events of the last week of our Lord's life on earth are commemorated. It is observed by all Catholics with strictness and penitence, all the offices and devotions bearing this note. It begins with Palm Sunday, on which the palms are blessed in commemoration of Christ's entry into Jerusalem. On Maundy Thursday white is used at the Mass, because on that day Christ instituted the Blessed Sacrament, but immediately afterwards the altars are stripped and washed. No Mass is cele-

brated on Good Friday. During the last three days of Holy Week, the offices of Matins and Lauds (Tenebrae) are sung with impressive ceremonial, generally on the previous evening.

**Holywell**: (1) Markt. tn., 4½ m. W.N.W. of Flint in Flintshire, N. Wales. It is served by the railway, and besides lime quarries has zinc, lead, and copper ores. Close by are the ruins of the Basingwerk Cistercian abbey; but H. is named after St. Winifred's Well, long a Mecca for pilgrims and invalids in search of a miraculous cure. A Gothic structure now covers the spring. Pop. 7900. (2) Vill., 4½ m. N.W. by N. of N. Shields in the Wansbeck div. of Northumberland, England. Pop. 3400.

**Holywell Street**, part of old London, since done away with to widen the Strand between St. Mary's and St. Clement's churches. It was named after a holy well near by. In early times the residence of silk merchants, it was latterly notorious for the number of booksellers who made a livelihood by selling coarse and obscene literature.

**Holywood**, picturesquely situated seaport, co. Down, Ireland, 4½ m. N.E. of Belfast. Here took place (1644) the signing of a solemn league and covenant for the defence of the kingdom. The church dates from the twelfth century. Pop. 4000.

**Holzminen**, tn. on the r. b. of the Weser, 29 m. N.W. of Göttingen, at the base of the Sollinger Mts. in Brunswick, Germany. It is an agric. centre, and before the Second World War had iron and steel and weaving industries, also a school for builders founded in 1831. Pop. 12,900.

**Homa**, see SOMA.

**Homage**, in feudal times, the formal expression (*homo vestre devotio*, I become your man) of allegiance of a vassal to his lord. Noblemen at a coronation and bishops on appointment do H. to the sovereign.

**Homburg**, tn. of the Rhineland, Germany, 8 m. W.N.W. of Mulheim. There are collieries and engineering works. Pop. 30,000.

**Homburg vor der Höhe**, or **Bad Homburg**, tn. and watering-place in Hesse, Germany, situated on a spur S.E. of the Taunus Mts., 8 m. N.W. of Frankfurt-on-Main. Before the Second World War it was one of the most fashionable spas in Europe, and was yearly visited for its saline and chalybeate springs by some 12,000 people. Machines, hats, and white-lead were manufactured. Its pre-war pop. was 16,800. The tn. was almost completely destroyed in the war.

**Home**, Earls of, belong to an historic Scottish border family. Sir Alexander Home (d. 1391) was created a peer by James III., but afterwards joined the nobles against the king and was present on the field of Sauchieburn (1488), where the latter died. His great-grandson, Alexander, the third Lord H. (d. 1616), was chamberlain to James IV.; he actually escaped with his life from Flodden, and was finally enticed to Holyrood

by specious offers from Albany, the regent, and summarily executed for treason Alexander, the sixth Lord H. and the first earl (died 1805), carried on endless feuds with the Hepburns whom he was Warden of the Marches. His father Alexander the fifth Lord H. (d. 1575) had fought against the queen at Carberry Hill and Lumside, probably because Bothwell was the head of the Hepburns his literary foe. The ninth earl (d. 1756) from whom the present earl traces his descent succeeded his brother who fought against the Pretender at Prestonpans.

Athelstaneford, but in 1757 he retired from his charge. He made many acquaintances with literary folk, and was introduced to Lord Bute soon after he resigned his clerical duties, and for some years served as his private secretary. In 1802 he pub. a *History of the Rebellion of 1745*, but it is as a dramatist he is best known. His prin. plays were *Agis* (1758), *The Siege of Iquileia* (1760), *Alonso* (1773), and *Alfred* (1778). His last drama, *Douglas*, produced at Covent Garden in 1757, with Barry and Peg Wollington in the cast was his greatest



A HOME GUARD MARCH PAST IN AN ENGLISH VILLAGE YARDING, KENT.

**Home Counties**, term used to denote the cos. of Berkshire, Buckinghamshire, Essex, Hertfordshire, Kent, Middlesex, and Surrey. They are so named as being the nearest to the Metropolis.

**Home, Daniel Douglas** (1833-96), Scottish spiritualist, was brought up by an aunt in America, where, in 1850, he was already known as a spiritualistic medium. His life was spent in giving "ances" in England and on the Continent, especially in Russia, where he had an audience with the Czar. Browning, who was present at his meetings, records his unfavourable impressions in *Studge the Medium*, 1861. It was his table turnings and traffic with ghosts which led to his expulsion from the Rom. Catholic Church. See Jean Burton, *Heyday of a Wizard*, 1948.

**Home, John** (1723-1808), dramatist, served as a volunteer in the risings of '45 and two years later became minister of

success, and it is still remembered for the speech beginning 'My name is Norval,' which was long a favourite recitation. Then hailed as a second Shakespeare, he has since taken his place as a very mediocre writer, and his works no longer hold the stage. See A. J. Gipsou *John Home, a Study of his Life and Works*, 1917.

**Home Guard**, or Local Defence Volunteers, volunteer defence force, recruitment of which began officially in May 1940, in response to the War Minister's call in the emergency of that time, when it was becoming obvious that Britain was not immune from possible invasion. While not providing a parallel to the speed and enthusiasm of its recruitment, the muster of all men between 17 and 55 in 1940, under a *Law of the Vase Act* was in fact a precedent. The inception of the 1 D V or H G was a spontaneous movement based on this and other historic

precedents, including the musters of 1545 and 1588, the train bands of 1642, 1667, 1719, and 1759, the volunteer movement of 1859 and the volunteers of the First World War. The chief difference between the H.G. and any other form of military force raised in the Brit. Isles since 1803 was that, whereas the others, e.g. Sir John Firebrace's Horse, the Militia, the Wemyss Volunteers and the Territorial Force or Army, had been kept away from the front line until they were deemed sufficiently trained to meet the enemy, the H.G. was expected, and themselves expected, to meet the enemy wherever he might show himself in the country. But, of course, a great number of those who joined had seen service in the First World War, a fact which in all probability had its due effect in restraining the ardour of the Ger. forces which were reported to be available for manning the invasion barges. Men liable to be conscripted in the ordinary way were of course ineligible for the H.G. At first the H.G. was hardly an effective force at all, for no arms were available for their equipment other than a few thousand rifles and shot guns, old pikes and sabres and some Army revolvers and long barrelled Amer. revolvers used for clay-pigeon shooting. The formation of the H.G. at that moment in the nation's dilemma has been not inaptly called a gigantic bluff but, in view of the possible descent of Ger. paratroops armed with grenades and tommy-guns at vital spots such as factories, railway bridges, petrol dumps and Ordnance depots, the muster of H.G., albeit crudely armed, was better than no force at all for the purpose of supplementing the relatively few regular troops—the bulk of the regular divs. being in France or in the Middle E. On May 11 the General Staff accepted, in principle, the proposals for the formation of a defence force on a tn. and vil basis, giving the utmost lat. to local enterprise so as to launch the scheme with the minimum of delay and this indeed was the scheme on which the force was subsequently founded. In fact, even before Mr. Eden on May 14 broadcast his call for volunteers, the civilian pop. in certain parts of the country were forming themselves into bands to deal with hostile paratroops and the aim of the military authorities was to get this valuable movement on a regular footing as quickly as possible. It was on May 11 at a conference at the War Office that the name 'L.D.V.' was chosen but the popular name, 'Home Guard' was adopted two months later. The military authorities agreed on May 14 that the H.G. would form part of the armed forces of the Crown and would be subject to military law. The salient features of the scheme were simplicity, decentralised control and the minimum of formalities. There was to be no estab. and no pay, though travelling allowance was given. Nor were there to be an officers or n.c.o.s in the ordinary Army sense. Volunteer organisers were to elect and nominate to the Area Command individuals for appointment as company commanders. Arms, ammunition and uniforms were to

be issued under Command arrangements. It was on this incomplete and tentative basis that Mr. Eden's appeal was made and it was fully justified by its results. The equipment originally envisaged for the H.G. consisted of a rifle, bayonet, steel helmet, and arm brassard to be worn with civilian clothes. In fact even this equipment was beyond the actual possibilities at the time and it is said that when the official appeal was made the stock of rifles available in Britain was no more than 70,000 in all. The actual numbers of the H.G. in the early summer of 1943 approached 2,000,000. But by that time men could be compulsionarily directed to serve if they were of an age and condition that justified that course. There were about 1,000 battalions, some of which were sev. thousand strong. The number of H.G. anti-aircraft batteries—for in the intervening years many had been directed to this role—was large and there were 43,000 officers in the H.G. General Service units and A.A. Batteries. It is stated on good authority that, by 1943, only 7 per cent of the men were ex-servicemen, this reduction being due to the elimination of the elderly and unfit and the average age of the H.G. was by that time slightly under thirty. They were now fully armed and trained, able to use their weapons which ranged from the bayonet to the 3 7 gun and yet remained the most inexpensive of military forces, a fact largely due to the patriotism and generosity of private individuals. The H.G. was disbanded on Dec. 31, 1945. Parades, however, had ceased in Sept. 1944 and orders were issued for the H.G. to stand down on Nov. 1, 1944. Delay in the formal disbandment was due to the necessity of facilitating the recall of arms and equipment. Officers were given honorary rank in the highest rank they held for an aggregate period of six months. See C. Graves, *The Home Guard of Britain*, 1943.

**Home Laundry, see under HOUSEHOLTERY.**

**Home, see COMEL.**

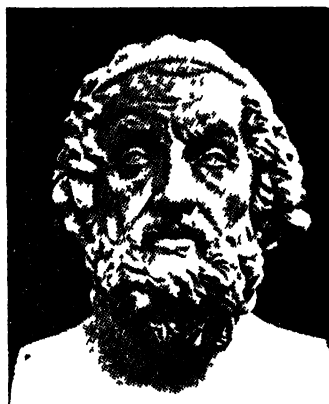
**Home Office.** The Home Secretary is, as regards home affairs, the constitutional channel of communication between the king and his subjects, and all petitions or addresses to the king must be addressed to him through the Home Secretary. The powers and duties of the H. O. are of the widest and most varied kind, but perhaps the most important relate to the control of the Metropolitan Police, the exercise of the prerogative of mercy, the administration of the Factory Acts (see FACTORY LEGISLATION), extradition proceedings, the carrying out of the provisions of the Aliens Act and the Naturalisation Acts, and the general superintendence and control over prisons, criminal lunatic asylums and approved schools once called 'reformatories.' The Home Secretary appoints recorders, stipendiary magistrates, factory inspectors, and inspectors under the Explosives Acts under the Anatomy Acts, and the Cruelty to Animals Act (or Vivisection Act). He sanctions by-laws of municipal boards, so far as they relate to 'order and

good governance.' He advises the crown (*q.v.*) as to pardoning convicted persons or commuting or otherwise reducing their sentences, and he can license prisoners under sentence of penal servitude either conditionally or unconditionally. He inspects the country police forces and can advise the Treasury to withdraw exchequer contributions if he finds such forces inefficient. All extradition proceedings pass through the hands of the Home Secretary, who makes the final order for extradition. He may refuse a certificate of naturalisation to an alien, and need give no reasons for so doing. He grants licences to scientific bodies to experiment on animals. He has power to authorise the exhumation and removal of bodies. He performs the routine work in respect of the licensing, the making of a canon law, and its subsequent promulgation. He prepares patents of nobility for peers and formal proceedings for the bestowal of honours also pass through the H. O. During the Second World War a great deal of work fell on the H. O. in connection with the provision of air raid shelters for the public and other measures of public security, there being set up in the H. O. for these purposes a ministry of Home Security. The Home Secretary is assisted in his duties by a paid under-secretary, a permanent under-secretary, three assistant *liaison* secretaries and a large clerical staff.

Homer, great epic poet of Greece. The date of his birth is quite uncertain. Herodotus declared that Hesiod and *H.* were contemporaries and lived 400 years before his own time. Most scholars now assign the *Iliad* and the clearly somewhat later *Odyssey* to some date from the tenth to the eighth century B.C. Many then claimed to be his *bp*—Smyrna, Chios, Argos, Athens, Salamis. His poems were regarded as the basis of Gk. literature, and every educated Gk. had learnt them in his schooldays. No real records of his life existed, but many legends grew up around his name. There are extant eight lives, included in the Oxford text of *H.* One of these, which is probably a literary forgery belonging to the second century A.D., was falsely ascribed to Herodotus, and contains the most popular legends with regard to his life. The biographer declares that *H.* was the illegitimate son of Cretheus, and that he was born near Smyrna on the banks of the Meles. He was subsequently adopted by his mother's husband Phemius, and travelled extensively in Egypt, Italy, and the *Is.* of the Mediterranean, collecting materials for his epics, which he wrote on his return to Smyrna. During the course of his travels he had become blind, and spent the rest of his life as a wandering minstrel, singing his songs in the *tas* of Asia Minor and the *Is.* of the Archipelago.

The tradition that the poet was blind probably arose out of two references to blind bards in the *Odyssey*, in which a personal allusion was traced. Demodocus, the blind harper who sang his lays in the halls of King Alcinoüs, is spoken of with great sympathy. He was beloved of the Muses,

who, having deprived his eyes of light, endowed him with the divine gift of song. If *H.*'s blindness is accepted, it must be assumed that he became blind in later life for the two epics show a keen perception of an exuberant delight in line and form and motion. The claims of Smyrna as his *bp* were supported by Pindar, Scylax, and Stesimbrotus. But Chios had equally strong if not stronger, claims. In that *Is.* there was worship of an anct. hero, Homeros, and an existing tradition of a family of Homerids. Its claims were also supported by Thucydides, Simonides, Acusilaus, and Hellanicus.



HOMER

It might be thought that the *Iliad* and the *Odyssey* were composed during the epochs which they describe, but it is now generally considered that *H.* drew on old sources and archaized to exclude anachronisms. His heroes belong to the bronze age, iron being hardly mentioned, yet the poet betrays himself by quoting a proverb that 'iron draws a man on (to quarrel)', showing that iron weapons in his own day were in common use. As has been said, the tenth to the eighth century is now the date assigned to *H.*, although some modern authorities put him even later.

The works of *H.* were studied critically in very early times. Theophrastus of Rhegium (*c.* 330 B.C.) regarded the epics as allegories, so that he might reconcile its principles with the morality of his own time. His theory was accepted by Anaxagoras and Metrodorus. Xenophon, Plato, and Aristotle carefully studied the structure and meaning of the poems, while Antimachus paid attention to the text. The great textual critic of anct. times was Aristarchus. Other Alexandrian critics of

importance in this connection were Zenodotus and Aristophanes. The critical emendations and suggestions of Aristarchus are preserved in the *Codex Venetus* in the library of St. Mark, Venice (pub. by Villoison, 1788). The unity of *Iliad* and *Odyssey* as poems was almost unquestioned down to the eighteenth century. By his pub. of the *Prolegomena ad Homerum* in 1795, F. A. Wolf opened the controversy which is known as the 'Homeric question.' Wolf held that the *Iliad* and the *Odyssey* consisted of a series of songs which were not put together until about 500 years after they were composed. He argued that writing must have been unknown to H., that therefore the songs were passed on from one generation to another orally by the Rhapsodists; that since poems of such length could not be transmitted through centuries without any recourse to writings, the present form of the poems could not be the original form, and that, according to the 'voice of antiquity,' Pelsistratus 'first committed the poems of H. to writing and reduced them to the order in which we now read them.' It is now generally admitted that the poems were certainly unwritten, whereas it is also agreed that it is possible for poems, even of such length, to have been memorised by the professional trained singers and minstrels of the Grecian courts. There may, at the same time exist in the text many interpolations or deviations from the original form of the poems. Wolf's statement about Pelsistratus's collection of the poems has no earlier authority than Cicero (*De Oratore*, iii. 34). The controversy raised by Wolf was hottest during the first half of the nineteenth century. Gottfried Hermann, in *De interpolationibus Homeri* (1832) and *De iteratis Homeri* (1840), maintained that he was able to distinguish three elements in the *Iliad*, a pre-Homeric element, a Homeric, and a post-Homeric. Lachmann went so far as to divide the *Iliad* into eighteen lays, and declared that the original lays had been broken up by interpolations and finally put into shape by Pelsistratus. The Wolfian theories were strongly opposed by Nitzsch in his *Maletemata* (1830) and *Die Sagenperiode der Griechen* (1852). Weicker, in *The Epic Cycle*, showed the early cyclic writers had been influenced in the structure and substance of their epic poems by the *Iliad* and the *Odyssey*; and that the latter in their present unity of form must be dated before the cyclic writers.

The question as to whether the *Iliad* and the *Odyssey* were written by the same author was first raised by Xeno and Hellanicus, called ο χωρίζοντες, the Chorizontes or Separators. The chief arguments which have been raised in favour of a sole authorship of the two poems are as follows: It is wonderful enough that in a primitive age there should have arisen a supreme genius near whom none can be placed in the world's literature save Dante and Shakespeare; but that two poets of such greatness should have lived then seems improbable indeed. It is also argued that though there must be some

difference in style between the *Iliad*, a poem of war, and the *Odyssey*, a poem of peace, the great outlines and essential styles of the two poems are similar, whereas each is wholly different from anything else produced by the writers of ancient Greece. The early Chorizontes argued in favour of two authors, by pointing out certain discrepancies between the two poems, such as the fact that the wife of Hephaestus in the *Iliad* is Charis, while she is Aphrodite in the *Odyssey*. Modern scholars have based their arguments in favour of a later date for the *Odyssey* (and, therefore, a different author) on differences between the two poems of vocabulary, grammatical forms, of treatment of the heroic legends, of institutions, political and social, and of religious or moral outlook. (See also GREEK—Greek literature.) See EDITIONS: D. B. Monro and T. W. Allen, 1912-19 (Oxford text); *Iliad*: W. Leaf, 2nd ed., 1900-02; T. W. Allen, 1931; *Odyssey*: W. W. Merry, J. Riddell, and D. B. Monro, 1876-1901; W. B. Stanford, 1917-48; *Scholion to Iliad*, W. Dindorf and E. Maass, 1875-88; *Scholion to Odyssey*, W. Dindorf, 1855. TRANSLATIONS (Vernon): G. Chapman, 1598-1610; A. Pope, 1715-26; W. Cowper, 1791; *Iliad*: A. S. Way, 1830-88; *Odyssey*: W. Morris, 1887; J. W. Mackail, 1903-10; S. O. Andrew, 1948; F. L. Lucas, 1948. (Prose): *Iliad*: A. Lang, W. Leaf, and E. Myers, 1883; A. T. Murray, 1924-25; *Odyssey*: S. H. Butcher and A. Lang, 1879; A. T. Murray, 1919; T. E. Shaw (Lawrence), 1932; E. V. Rieu, 1946. DICTIONARIES, CONCORDANCES, ETC.: G. L. Prendergast, *Concordance to Iliad*, 1875; H. Dunbar, *Concordance to Odyssey*, 1880; D. B. Monro, *Grammar of Homeric Dialect*, 2nd ed., 1891; R. J. Cunliffe, *Lexicon of the Homeric Dialect*, 1924. CRITICISM: M. Arnold, *On Translating Homer*, 1861-62; U. von Wilamowitz-Moellendorf, *Homische Untersuchungen*, 1884; *Ilias und Homer*, 1916; *Heimkehr des Odysseus*, 1927; A. Lang, *Homer and the Epic*, 1893; *Homer and his Age*, 1906; *World of Homer*, 1910; W. Ridgway, *Early Age of Greece*, 1901-31; H. Browne, *Handbook of Homeric Study*, 1905; H. M. Chadwick, *Homeric Age*, 1912; E. Bethe, *Homer*, 1914-27; J. A. K. Thomson, *Studies in the Odyssey*, 1911; J. A. Scott, *Unity of Homer*, 1921; E. Drorup, *Homer-problem in der Gegenwart*, 1921; P. Cauer, *Grundfragen der Homerkritik* (3rd ed.), 1921-23; J. T. Sheppard, *Pattern of the Iliad*, 1922; T. W. Allen, *Homer, Origins and Transmission*, 1921; G. M. Holling, *External Evidence for Interpolation in Homer*, 1925; C. M. Bowra, *Tradition and Design in Iliad*, 1930; W. J. Woodhouse, *Composition of Odyssey*, 1930; M. P. Nilsson, *Homer and Mycenae*, 1933; G. Murray, *Rise of Greek Epic*, 4th ed., 1934; A. Shewan, *Homeric Essays*, 1935.

Homer, Winslow (1836-1910), Amer. landscape painter, b. at Boston, Mass. During the Civil war he painted war pictures, among which was 'Prisoners from the Front.' Elected National Academician, 1865. Among his best known works



are: 'Life Line' (1884), 'Launching the Boat' (1884), 'The Look-out' (1897), 'The Maine Coast.'

**Home Rule.** The demand of Ireland for H. R., which was defined by John Redmond, the leader of the movement, as the rule of a local Irish parliament created specially to deal with Irish affairs, was for some fifty years the stumbling-block of Brit. politics. The demand was first put forward as a definite policy in 1871, but it was not till 1885, after the extension of the franchise, that Ireland returned a majority for H. R., when 85 members out of 103 were pledged to support H. R. From that time down to 1893 the Liberal party's adherence to the policy of self-gov. for Ireland was associated with the name of Gladstone, who introduced Bills in 1886 and in 1893. The latter Bill was carried in the Commons by a narrow majority, and promptly thrown out by the House of Lords. It set up a legislature and executive in Ireland to control Irish affairs, subject to the supremacy of the Imperial Parliament; and there were further safeguards to that supremacy in the shape of provisions analogous to those of the Colonial Laws Validity Act (see COLONIAL LAW), an express prohibition from dealing with the land question for three years, and a reservation of some thirteen important topics of legislation to the exclusive consideration of the Imperial Parliament. The depression in the fortunes of the Liberal party which endured thereafter for a period of seventeen years left the question dormant until after they were returned to power in 1906. The election of 1906 was generally understood to have been contested on the fiscal issue, the nominees of the Liberal party expressly undertaking not to introduce a H. R. Bill, but in 1907 the Irish Council Bill for the estab. of an Irish body to expend in Ireland the proceeds of Irish taxation was introduced and withdrawn. At the two later elections they made no such declarations of intention, and in April 1912, Asquith introduced his H. R. Bill. This Bill, which passed its second reading by a majority of over 100, was based on the model of the first Bill; but the financial provisions were more explicit. It estab. an Irish Exchequer and an Irish Consolidated Fund, and provided that the whole of the cost of Irish gov., with the exception of the expenditure on the reserved services, should be borne by the Irish Exchequer. Asquith's Bill passed the House of Commons in Jan., 1913, but was thrown out by the House of Lords. It was passed thereafter in three successive sessions by the Commons and so by the operation of the Parliament Act, 1911, became law irrespective of the assent of the House of Lords (see PARLIAMENT ACT, 1911). The Bill included Ulster and, in its earlier stages, was followed in 1912-1913 by stout resistance in that quarter, where the controversy incited by it rose almost to the brink of rebellion. Two of the chief protagonists in the resistance were Sir Edward (later Lord) Carson and F. E. Smith (later Lord Birkenhead); but this campaign suddenly died down and

the Bill passed the House of Commons in May 1914. The Lords excluded Ulster, and the King then made an attempt to bring the parties together, but without success. The outbreak of the First World War, however, changed the whole face of things, and the Bill thereafter became law without further resistance for the whole of Ireland in Sept. 1914. Its operation, however, was postponed by the Speaker until after the War, and the sequel to this postponement was that the Bill never came into operation at all (see further under EIRE; IRISH FREE STATE).

**Home Rule Movement, Scottish, see SCOTLAND.**

**Homestead**, hor. in Allegheny co., Pennsylvania, U.S.A., on the R. Monongahela, 6 m. S.E. of Pittsburgh. It was founded in 1871, and was incorporated in 1880. Here are the famous iron and steel works of the Carnegie Co., which rank with the largest in the world. At these works in 1892 occurred a tremendous strike, the rioting in connection with which had to be quelled by state troops. Pop. 19,000.

**Homicide**, see MANSLAUGHTER; MURDER; and INFANTRY.

**Homildon Hill**, one of the Cheviot peaks, near the vil. of Homildon or Humbleton, 20 m. S. of Berwick, Northumberland, England. It was the scene of the battle (1102) in which Hotspur and the earl of March defeated the Scots under earl Douglas.

**Homily**, discourse addressed to the congregation in a church. It was customary in the Jewish synagogues after the reading of the law for an explanatory discourse to be given, and this practice was early adopted by the Christian Church. The Alexandrian school was particularly rich in such exegetical expositions, the most famous anct. collection of Hs. being that of Origen in the third century. The Hs. of the Church of England are a collection of sermons (see ARTICLE XXXV.) for the use of unlearned preachers. The first part was pub. in 1547, the second in 1563.

**Homocyclic Compounds**, organic ring compounds in which all the atoms composing the ring or rings are atoms of carbon. Examples are benzene, naphthalene, and anthracene.

**Homœopathy** (Gk. *homoeos*, like, *πάθος*, disease), name given to a system of medicine introduced by a Ger. physician, Samuel Hahnemann, who was b. at Leipzig in 1755 and d. in 1843. In his *Organon of Medicine*, Hahnemann set forth the principles on which his system was based. These were: (1) That morbid conditions are cured by the same medicines which would produce the disease in healthy bodies, in accordance with the old belief expressed by the Lat. phrase '*similia similibus curantur*' (like is cured by like). (2) That drugs administered should be simple and not compounded. (3) That in most cases only very small quantities of the drug should be given, on the theory of dynamisation, or increase of force with diminution of matter, such dynamisation, it is alleged, being produced by trituration (i.e. grinding to a fine powder) and by extreme dilution.

There are very few followers of H. at the present-day. In contradistinction to H., the ordinary method of treating disease is described as *heteropathy* or *allopathy*. See also HAHNEMANN and MEDICINE. See T. L. Bradford, *Life and Letters of Hahnemann and Paracelsus*, 1923, and *Constitutional Medicine*, 1926; E. A. Neatby and T. G. Stenham, *A Manual of Homoeopathic Medicine*, 1927.

**Homogeneous and Heterogeneous** are two mathematical terms. The former is applied to magnitudes which are commensurable, and in algebra to all terms of the same degree, as for instance  $x$  and  $y$ . The word is Gk. for 'of the same kind.' 'Heterogeneous,' which is Gk. for 'of a different kind,' is the opposite of 'homogeneous,' and describes a group of incommensurables, e.g. spheres and plane circles.

**Homolousian**, theological term, which became a party word at the time of the Arian controversy. It is derived from the words *ὁμοι*, 'same,' and *οὐσία*, 'substance,' and denotes the consubstantiality of the Father and the Son in the blessed Trinity. The more moderate Arians, unwilling to say that the Son was of a different substance from the Father, wished to use the phrase 'of like substance.' See ARYAN; ATHANASIUS.

**Homologation**, in Scots law, denotes an act by which a person signifies his approval of a deed so as to make it obligatory upon him in spite of any defects in it. A common instance of H. occurs where a person capable of consenting approves a deed granted by him at a time when he was legally incapable of giving his assent to its terms, as e.g. by a minor on his attaining majority in respect of a grant made during minority without the consent of his curator. But to be valid H. must be an act from which it may be clearly inferred that the person homologating both knew and approved the contents of the instrument. See G. Bell, *Commentaries on the Law of Scotland*, 1810; J. Erskine, *Principles of the Scotch Law*, 1754.

**Homologous Series**, in chem., a series of similar organic compounds, any two consecutive members of which differ in molecular constitution by 1 carbon atom and 2 hydrogen atoms. There are sev. such series, and owing to a certain amount of similarity of constitution the substances forming them are conveniently studied by reference to their particular series. For example, the paraffins comprise the following bodies: methane,  $\text{CH}_4$ ; ethane,  $\text{C}_2\text{H}_6$ ; propane,  $\text{C}_3\text{H}_8$ ; butane,  $\text{C}_4\text{H}_{10}$ ; pentane,  $\text{C}_5\text{H}_{12}$ , etc. It is seen that each member contains one atom of carbon and two atoms of hydrogen more than a molecule of the preceding member, and the series as a whole may be represented by the algebraic formula  $\text{C}_n\text{H}_{2n+2}$ . The homologues, or members of a H. S., may usually be obtained by similar methods, and they are alike in their general properties. Other H. S. are the olefines, general formula  $\text{C}_n\text{H}_{2n}$ ; the acetylenes, general formula  $\text{C}_n\text{H}_{2n-2}$ ; the monohydric alcohols, general formula  $\text{C}_n\text{H}_{2n+1}\text{OH}$ ; the aldehydes; fatty acids, etc.

**Homology**, conformity of type which is suggestive of development or inheritance from a common ancestor, and is used as one of the morphological arguments which support the Darwinian theory. H. may be indicated by members of the same class, resembling one another in their general plan of organisation, as in the case of the mouth parts of insects, though these show innumerable varieties of form and use, or as in the case of the general structural resemblance of the arm of man, foreleg of horse, wing of bird, flapper of seal. *Serial homology* (also called metamerism or metameric segmentation) is that unity of type found on comparing the different parts or organs in the same individual, e.g. the segments or rings and their appendages which comprise the body of a worm.

**Homology**, see also under MORPHOLOGY. **Homoptera**, name given to one of the two sub-orders of Hemiptera (bugs) (q.v.), whose members differ from those of the Heteroptera in that their wings cover the abdomen in a rooflike manner and both pairs of wings are alike (hence H. = similar wings; Heteroptera = different wings). The basal and apical parts of the wings are generally of the same consistency, and sometimes all four wings are transparent; the head is furnished with three ocelli (simple eyes) placed triangularly on the summit, and the front of the head is bent over, touching the coxae (basal joints) of the front legs. This sub-order includes the Cicadidae, Ginkgoideae, Membracidae, Coreopidae, Jassidae, Psyllidae, Aphidae (green flies), Aleocharidae, and Coccidae (e.g. the cochineal insect).

**Homs**, (1) tn. in Libya, pop. 30,000. (2) tn. and sanjak of Syria, see HEMS.

**Honan**, one of the Central Provs. of China, bounded on the N. by the Hwangho, on the S. by Hupeh, on the E. by Nganhui, and on the W. by Shensi. The country is traversed by the Funiu Shan Mts., running E. and W. It is very densely populated, largely owing to the fertility of the soil. The chief products of the prov. are cotton, wild silk, cereals, and fruit. Coal is found near Honanfu, Juchow, and Lushan; other minerals are iron, sulphur, and salt-petre. Some opium is grown, the traffic in this being very extensive, especially the morphia pill traffic in the N. part of the prov. To the N. of the Hwangho, there is a beautiful fertile plain, with bamboo plantations and groves of cypress. There are good roads and the Peiping-Hankow Railway traverses the prov., having branch lines to Honanfu and Kaileng (the cap.). During the civil war much fighting was carried on in H. The area is 64,500 sq. m. Pop. 28,473,000.

**Honanfu**, city in Honan, China, situated on Lo R., a trib. of the Yellow R. Under the Chon and following dynasties, it was the cap. of China and was called Lo-yang. Coal mines are in the vicinity. During the civil war Marshal Wu fled to H. on the fall of Chongchow in 1927.

**Honawar**, or Honore, seaport on W. coast of India, N. Kanara dist., in the Presidency of Bombay. It was visited by Ibn Batauta (1342). Pop. 59,900.

Honda, tn. (alt. 690 ft.) of Colombia, S. America, on the Lower Magdalena R., 60 m. N.W. of Bogota. The riv. is navigable up to this point. The tn. is an old Sp. settlement with picturesque narrow streets Pop. 12,000.

Hondecoeter, Melchior d' (1630-95), Dutch painter, b. at Utrecht, Holland, a pupil of his father, G. de H., and uncle, Jan Baptist Weenix. He was a skillful painter of poultry, depicting the feathered families with great sympathy. His most famous painting, 'The Floating Feather,' hangs in the Amsterdam gallery. Hondecoeter's paintings may be seen in the National Gallery, London, and in the Liverpool, Berlin, Dresden, Hague, Paris, Leningrad, Florence, Venice, and Vienna galleries.

Hondo, see JAPAN.

Honduras, republic of Central America, lying between the Caribbean Sea on the N., Nicaragua on the S. and E., and Guatemala on the W. Area about 41,300 sq. m. The country is mountainous, forming an elevated tableland of an average height of 8000 ft., rising to 10,120 ft. in the case of Montana de Selague. The Cordilleras are continued from Nicaragua into the S. portion of the country. The highlands of H. are not so high as those of Guatemala, to which they are closely related geologically. The volcanic plateau, with its flows of dark-coloured lava and its beds of ash, faces with the steep escarpment toward the Lempa Valley of Salvador. The highest elevations are in S. H., near La Esperanza and Tegucigalpa, where there are sev. peaks about 8000 ft. high. There are a few inter-montane basins composed of gently rolling, hilly surfaces which lie at elevations between 3000 and 4500 ft. Block ranges, similar to the central highlands of Guatemala, are found in N. H. The chief valleys are the plain of Comayagua, and those formed by the rivs. Humuya and Gonsoran. The former is a trib. of the Ulua, the largest riv. in the country, which flows N. into the gulf of H. Other important rivs. are the Segovia, forming the boundary with Nicaragua, the longest riv. in Central America; the Nacaome, Aguan, Rio Negro, and Choluteca. The chief ls. belonging to H. are the Bay Is., and Tigre, Sacate Grande, and Gueguand in the bay of Fonseca. The climate along the Atlantic coast is oppressively hot, but on the highlands the temp. is mild. Cattle-rearing is the chief industry of the inhabs., but breeding is not carried on scientifically. The woods yield valuable timber, H. has an abundance of hard and soft woods. Mahogany and other hardwoods grow in the N.E. part of the country, in the valleys and near the S. coast. The most important hardwoods, other than mahogany, are grenadino, guayacan, walnut and rosewood. Stands of pine occur widely in the interior. Bananas, coconuts, oranges, lemons, maize, tobacco, cocoa, indigo, and sugar are cultivated. The chief culture is that of bananas, which are grown on the Atlantic coast. In 1943-45 over 9,000,000 stems were exported, mostly to the

United States. Panama hats, footwear, cigars and soap are the chief manufs. The mineral resources of the country—which comprise gold, silver, platinum, copper, antimony, zinc, etc.—have not been developed on a large scale; only gold and silver are now mined. Brown coal seams have been found. There are rich fisheries as yet undeveloped, and Turneese sponges are the finest in the world.

Cape H. was discovered by Columbus in 1502, and became a Sp. colony. Comayagua, in the rift valley, was for a long time, the leading tn. of the highlands of H. Founded in 1540 on the road between the silver mines and Guatemala, it became the political centre of this part of the Sp. domain, and continued to perform the functions of local administration until Tegucigalpa was selected as the cap. of independent H. in 1827. The settlements, which are grouped in the rift valley around Comayagua, like those farther W., grow maize for local subsistence, and produce coffee and cattle for sale. In 1821 it threw off the Sp. yoke and joined the Federation of Central America. In 1839 it became an independent state, and was subsequently involved in frequent wars with Guatemala. It has suffered from internal strife, particularly during the civil wars of 1883 and 1903. In 1907 war was declared against Nicaragua in which Bonilla, the Honduran president, was defeated. In 1911 that general was re-elected president. There was a rising in 1931 in the N. due to unrest among the banana plantation workers led by General Ferrera, who was killed by Govt. troops. A Congress of Deputies composed of thirty-eight members is elected for six years by popular vote and is in session for some two months of the year. The executive power is vested in the President, who is nominated and elected for four years. When Congress is not sitting, affairs are directed by a permanent Commission of some five members—a modification of the Constitution which dates from 1924 and further modified in 1936. The administration is in the hands of a council of ministers. The National Univ. is at Tegucigalpa, the cap. (pop. 66,000). Other tns.: San Pedro Sula (22,100), La Esperanza (11,000), Nacaome (10,000), Santa Rosa de Copan (8000), Choluteca (5000), Comayagua (5000). Ports: on the Atlantic coast, La Ceiba (12,100), Tela (10,400), Puerto Cortez (8000), and Trujillo (7500); on the Pacific coast, Amapala (3000). The port of entry for the bay Is. is Roatan. The total pop. (1945) was 1,200,500, including aboriginal tribes, 35,000 (chiefly Mosquito and other Indians all speaking different languages). The Sp. speaking inhabs. are chiefly *mesizos*, i.e. Indians with an admixture of Sp. blood. On the N. coast there is a considerable proportion of negroes, working for fruit-trading companies; some 3000 of these are Brit. subjects and their immigration is now forbidden.

By the completion in 1943 of the Inter Amer. Highway, H. is connected with the highway system of Guatemala, El

**Salvador and Nicaragua.** An Inter-Ocean Highway linking Tegucigalpa with both the Caribbean Sea and the Pacific Ocean, is under construction. There are only three railways and these are confined to the N. coastal region, where they are used mainly for the carriage of bananas. Tegucigalpa is not served by any railway and there are no international rail connections. The total railway mileage is 650. The road service, generally unsatisfactory, has been improved. There is an air service and telephones and telegraphs. There are seven gov. wireless stations and four broadcasting stations. See H. Jallay, *La République de Honduras*, 1898; E. M. Lopez, *Geografía de Honduras*, and *Historia de Honduras* (Tegucigalpa) 1919; A. B. Quinones, *Geografía e Historia de Honduras* (Choluteca) 1927; G. B. Reyna, *Honduras* (Tegucigalpa), 1930; C. M. Wilson, *Central America*, 1941; Preston E. James, *Latin America*, 1941.

**Honduras, British,** see BELSIZE and BRITISH HONDURAS.

**Honduras, Gulf, or Bay of,** broad basin of the Caribbean Sea, skirting Honduras, Guatemala, and Brit. Honduras in Central America.

**Hone, William** (1780-1812), pamphleteer, set up in 1817 as a bookseller, and soon became notorious as a publisher of political lampoons, for the issue of one of which he was unsuccessfully prosecuted. He became yet better known when he issued sev. satires written by himself, with illustrations by George Cruikshank. The best of these are *The Political House that Jack built* (1819), and *The Man in the Moon* (1820). Perhaps he is to-day best remembered by his *Leery Day Book* (1827), and his *Table Book* (1819), which are still obtainable in modern eds.

**Honegger, Arthur**, Swiss composer, b. at Le Havre, France, 1892. He possesses great technical ability, and has evolved a modernist style through contrapuntal methods. Especially important are his oratorio *King David* (1922) and his 'mimed symphony' *Honore Victorien* (1922); and he is the composer of the popular 'programme' piece, *Pacific No. 237* (1923), which was inspired by a modern Ainer. long-distance locomotive (and closely imitates its noise by the means available in a symphony orchestra), and *Rugby*. H. is one of the group of composers known as 'les Six.' See studies by A. Roland-Manuel, 1925; A. George, 1926; and W. Tappolet, 1938.

**Honesty, or Lunaria biennis**, species of Cruciferae, grown in Brit. gardens, is a native of Europe. It is a hardy plant bearing racemes of lilac-coloured flowers which have no scent, and the fruit which follows them is a silicle.

**Honey**, thick syrup collected by bees and also by a few species of wasp and by honey- or pouched-ants. The bees suck nectar from flowers and empty it from their crops into the cells of their hives. H. is most plentiful where flowers luxuriate and when the weather is dry and warm. The ants, vaunted the H. of Mt. Hybla in Sicily, and the aromatic, highly-

granulated H. of Narbonne is famous to this day. Virgin-H., gathered by young bees before they have swarmed, is finer than the H. of old hives. The colour varies with the source: heather-H. is a deep golden-yellow, and the H. from white clover a greenish-white. The Koran refers to H. as a liquor 'wherein is a medicine for men,' and in India and elsewhere its value as a gentle laxative has long been recognised. It was a favourite article of food among the ancient Gks., and was an ingredient in such popular beverages as mead, the 'claire' of Chaucer's day, and the Rom. 'mulsum.' Chemically, H. is composed of levulose (36.45 per cent.), dextrose (36.57), water, mineral matter, pollen, and wax. On an average H. contains over 70 per cent. of invert sugar (q.v.). Starch, water, glucose, and gypsum are common adulterations. In normal years, Hungary and Poland are among the chief H. producing countries, in favourable years Hungary can produce 9000 tons. It is also imported from California, New Zealand, and Australia. It is a minor colonial product. There are small bee-keeping industries at Mauritius, Cyprus, Palestine, Brit. Honduras, Brit. Guiana and various W. Indian colonies. The only colony with a substantial trade is Jamaica—averaging 800 tons annually.

**Honey-buzzard**, popular name of *Pernis ptilorhynchus*, a species of taloniform bird belonging to the family Buteoninae. It is occasionally found in England and is common in the wooded districts of W. Europe, from whence it migrates in winter to Africa. Its food consists of insects, small mammals, birds, etc., which it devours upon the ground; it derives its name from the habit it has of plundering the nests of bees and wasps for the sake of the honey. The plumage is variously coloured and is often indistinguishable from the dense foliage in which it H. prefers to nest.

**Honeycomb-moth**, popular name given to members of *Galleria*, a genus of lepidopterous insects belonging to the family Pyralidae. Certain of the species infest beehives, where they deposit their eggs; the larvae feed on the comb, through which they make tunnels. There are two broods in the year, the first appearing in May and the second in full summer. *G. mellonella* is the largest and best-known species.

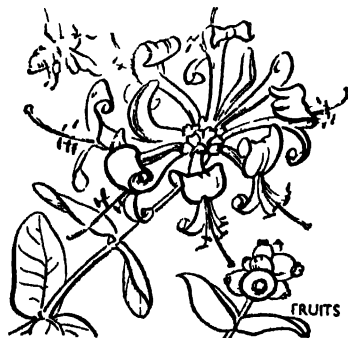
**Honey-dew**, sweet and sticky exudation found, especially in warm, dry weather, on the leaves and stems of many trees and plants. Some hold that it is invariably associated with Aphides (Cocci), as, for instance, *Coccus mannifera*, and other insects. For it is known that Aphides excrete from the abdomen a fluid indistinguishable from H., the theory being that they prick a hole in the leaf or stalk and so suck the excess of sugar from the flowing sap. Others believe that without these insects H. would still form whenever the tissues of plants are broken. H., which is also called manna, has been known to fall in showers. As it closes the pores when it dries, and thus hinders the natural growth of a plant, gardeners use a syringe to wash it away.

**Honey-eaters**, name given to the species of *Meliphagidae*, a large family of passeriform birds found in the Australian region. They are small birds with beautifully coloured plumage, long curved beaks, and long tails. Their habits are active and pugnacious, and they are constantly hopping from tree to tree in search of honey and insects which constitute their food. The species of *Meliphaga* are among the most brilliantly plumaged of all birds. *M. auricoma* being one of the best known. *Anthornis* the New Zealand bell birds and *Manorhina melanophrys* the bell bird of Australia are remarkable for their clear tinkling voice.

**Honey Flower**, see *METASTANTHUS*.

**Honey-guide**, name given to the species of *Indicator* and *Prinodius*, two genera of coraciiform birds which constitute a sub-family Indicatorinae. They were formerly placed among the cuckoos but are more nearly related to the woodpeckers and barbets. Most of the species are found in Africa but *I. archipelagus* and *I. minor* inhabit the Malay Peninsula and Borneo. Their name is derived from their curious habit of conducting travellers in the direction of beehive nests by means of a shrill cry or hiss, and they will flutter round until they are sure that they are being followed. *P. regulus* is a native of Natal and *P. insig.* is a Equatorial Africa.

**Honey-locust Tree**, or **Three-horned Acacia**, for its name of the leguminous plant *Gleditsia trianthus* a native of the Carolinas and Virginia. The trunk and branches of the young tree are covered with prickles, the foliage is of a light shining green and the seeds are covered with a sweet pulp.



HONEYSUCKLE

**Honeysuckle**, or *Lonicera periclymenum*, species of *Caprifoliaceae* found in hedgerows of Britain, often known by the name of woodbine. It is a shrub of climbing habit, bearing heads of white flowers which yield a sweet fragrance, at night hawkmoths are attracted to the plants by their scent, fertilisation takes place and

the flowers change to a yellow colour. The fruit of the H. is a bright red berry. The term Fr. H. is applied to the leguminous herb *Hedysarum coronarium*, which grows in Spain and Italy. It is a hardy perennial which bears deep red or white flowers, and in Calabria is given to horses and mules as food.

**Honeysuckle Tree**, see *BANKSIA*.

**Honfleur**, seaport on the N bank of the Seine estuary, 8 m S E of Havre, in the dept of Calvados, France. It is a railway terminus, controls a brisk fishing-trade and exports agric. produce to England. There are antiquities of interest. Pop. 8300.

**Hong Kong** (from *Hiang-Kiang*, fragrant stream), is in the China Sea, separated from the coast of China by the Laimun or Lymoon (Carpenter) Pass, a strait less than half m in width. H. K. is a Brit. colonial dependency and lies S of Kowloon Prov. and N of the Pearl R. estuary. The colony includes the two of Hong Kong, which has an area of 32 sq m with a length of 11 m and a breadth varying from 2 to 5 m. The S tip of the mainland peninsula of Kowloon with an area of 44 sq m, and Stonecutters Is., 4 sq m as well as the New Territories which consist of an area of hinterland with many is. (area 300 sq m). The New Territories stretch northwards to the Shum (Lun) R. and include the seabeds of Deep Bay to the W. and Mira Bay to the E. The total area of the colony is thus about 36 sq m, most of which is steep and unproductive hillside. H. K. rises steeply from the N shore to a range of treeless hills of volcanic rock of which the highest point is Victoria Peak (1823 ft). The scenery, especially along the coast, is indented shores is superb. Between the hills and the N water front lies the city of Victoria. Most of the urban area of the is. is flat unreclaimed land. There is almost land locked natural harbour, varies in width from 1 to 3 m and is entered from the E by a deep water channel through Laimun Pass and protected from the W. by a cluster of is. through which a shallower channel gives access to the coastal vessels. H. K. harbour has become the gateway to S. China, lying, as it lies half way between Haiphong and Shanghai. The Kowloon Peninsula which is flat and has been extended in area by reclamation has grown greatly as a residential suburb and besides, contains the chief industrial area of the colony, on the W. shore are wharves for ocean-going ships and at the S end of the peninsula is the terminus of the Kowloon-Canton Railway. Between Kowloon and the New Territories to the N is the Unicorn range of hills. The New Territories are steep and barren, the highest point being the Peak Laimoon (1110 ft), 7 m N W of Kowloon, N W of which peak is the colony's largest area of cultivable land stretching to Deep Bay. The E half of the New Territories mainland, mountainous and unproductive, extends to the rocky and indented coastline of Mira Bay. Where cultivation is possible vines exist and crops are grown; intricate terracing brings as

much land under cultivation as possible and the traditional methods of Chinese farmers have changed as little in H. K. as in China. Few of the 75 adjacent is. included in the New Tera. show traces of the impact of W. civilisation and many are uninhabited. The largest is. is Lantau, rugged and beautiful, lying W. of the harbour. It is more than twice the size of H. K. is. and its highest peak is 3000 ft. Wooded ravines and scrub-covered spurs, where may be found plenty of wild boar and barking deer, slope steeply upwards. The other is. are much smaller, the smallest inhabited is. being Ngai Ying Chau (8 ac.). The total estimated pop. of the New Tera. is 60,000.

**Climate.**—The climate of H. K. is sub-tropical and conditioned largely by the monsoons, the winters being cool and dry and the summers hot and humid. The climate is unfavourable to Europeans owing to the rapid alternations of heat and cold and the chief tn. retains the violent heat of the sun long after sunset, being hedged in by rocks which keep off the cool evening breezes; but for six months of the year the weather is cool and dry with long periods of sunshine daily. The summer is the rainy season, three-quarters of the ann. rainfall falling between May–Sept. Fog and very low cloud are common in March and April when S. winds may temporarily displace the cool N.E. monsoon, which sets in during Oct. and lasts till April. The S.W. monsoon prevails from May to Aug. From June to Oct. H. K. may be affected by typhoons, but they are sometimes experienced before and after this period. A typhoon whose centre is over or near H. K. is accompanied by hurricanes, which may result in much damage and loss of life. The mean monthly temp. ranges from 59° F. in Feb. to 82° F. in July, the yearly average being 72° F. The temp. rarely rises above 95° F. or falls below 40° F.

**Commerce and Industry.**—The main primary product of H. K. is fish, deep-sea fishing being an important occupation. **Agriculture** is limited by reason of the rugged and mountainous terrain and **mineral resources** are believed not to be great. A new Dept. of Agriculture was set up very soon after the colony was retaken in 1945, which not only did much to restore the farming industry to what it was before the war but also to establish it on a much sounder basis with a view to steady development on scientific lines. Some progress was also made towards the organisation of co-operative production and collective marketing was estab. in a few areas among tomato-growers. A small Gov. experimental station which existed in the N. Tera. before the war was restarted after the Brit. re-occupation. Before the war there was a Botanical and Forestry Dept., which took charge both of the Botanical Gardens and gov. grounds and of the afforestation of the hill-sides. After the war it was decided to have two independent depts., one for forestry and one for gardens. What little **mining** is done is entirely in the New Tera. Only five small mines are at present being

worked: one produces lead and silver, two are working wolfram deposits with indifferent success, and the other two produce kaolin and magnetite respectively. **Local industry** includes shipbuilding, ship repairing, engineering and a wide range of light industries, the main products of which are textiles, rubber goods, buttons, leather goods, cigarettes, matches, preserved ginger and confectionery, tinned goods, glassware and paint. The majority of H. K.'s working pop. is engaged in occupations connected with commerce rather than production but enterprise and cap. are not lacking when an economic demand arises which can be satisfied by the expansion of local industry. H. K.'s industrial production is almost entirely in Chinese hands, most of the factories being Chinese-owned and managed. The number of factories registered in 1941 was 1200; at the end of 1946 36° were re-registered and a further 537 had applied for registration. The outbreak of war with Germany had a stimulating effect on the colony's industries, particularly on the larger dockyards and on local factories producing war equipment; but during the war against Japan industrial activity in the colony was brought virtually to a standstill. By the end of 1946 the recovery of production capacity varied from twenty to fifty per cent of pre-war levels. On the whole little direct war damage was done to factories except to the shipbuilding and repair yards and to a sugar refinery; machinery was in many cases removed by the Jap. and could not be recovered. Before the war more persons were employed in the textile industry than in any other single industry, there being 25,000 engaged in cotton weaving in 150 factories—making cheap shirts and prints for export to Malaya, Ceylon, and E. and W. Africa; and 15,000 in 450 knitting factories. At the end of 1946 there were 90 cotton-weaving factories in operation and practically no knitting factories. The manu. of electric torch batteries gave work before the war to 2000 or 3000 workers in twenty factories. During 1945–46 ten resumed operation, but production in 1946 was restricted to about twenty per cent of pre-war. There were also eleven factories engaged in the manu. of preserved ginger, all of which resumed operation in 1946, but the total of employees amounted only to 500 as against 3000 in 1911 and production was far below pre-war level.

The chief tn. of H. K. is Victoria, the seat of gov. and of trade, which stretches for 5 m. along the N. coast. It is built in three layers, the Praya or Esplanade, which is given up to shipping, the Chinese quarters being beyond the commercial portion; the second layer which contains gov. house and other public buildings; and the Peak, or third layer, which is reached by a cable tramway. Before the war frequent scheduled passage and cargo services connected H. K. with the world. Ships of many nations were to be seen in the harbour, the most frequent callers, apart from the Brit. F. and O., Blue Funnel, Ben Line, Bank Line, Ellerman's and

Canadian Pacific Lines, being Amer., Scandinavian and Fr. ships. In addition to ocean-going tonnage, there was a large traffic in cargo and passengers between H. K. and Chinese ports; this was largely carried on by sailing and motor junks, but riv. steamers, Brit. and foreign, also accounted for a fair proportion. The port facilities were seriously impaired both as a direct result of hostilities and also through neglect during the Jap. occupation. The total shipping entering and clearing during 1946 was 45,484 vessels of 11,244,311 tons; this, compared with 1939, showed a decrease of 29,133 vessels and a decrease of 19,653,637 tons. Some 37,922 vessels (10,988,170 tons) were engaged in foreign trade, compared with 23,881 vessels (29,196,466 tons) in 1939. But throughout 1946 there was a steady quarterly increase in the number of vessels using the port, the tonnage rising from 492,189 in the first quarter to 1,403,021 in the last. Over 1946 food-stuffs headed the list of imports (about H. K. \$210 million) followed by oils and fats (\$114 million) piece goods (\$100 million) and metals (\$10 million). The largest item of exports in 1946 was oils and fats (\$143 million), followed by piece goods and textiles (\$128 million), food stuffs and provisions (\$116 million), Chinese medicines (\$60 million), metals (\$39 million) and paper-ware (\$31 million). Trade returns do not differentiate between re-exports of overseas commodities and those produced in the Colony, but exports of those goods in which local factories are interested show that singlets, shirts, etc., (value \$13 million), electric torches and batteries (\$9 million) and rubber shoes (\$31 million) were exported.

**Government.**—H. K. is administered by a governor assisted by an executive council and a legislative council. The executive council, which is consulted by the governor on all important administrative matters, includes the senior military officer, the colonial secretary, the attorney general, the secretary for Chinese affairs, the financial secretary (who are members *ex officio*), and such other members, both official and unofficial, as may be appointed. At the end of 1947 there were eight official members (including the five *ex officio* members) and seven unofficial members, two of whom were Chinese. The legislative council consists of not more than nine official members, including the same five *ex officio* members listed above, and not more than eight unofficial members. At the end of 1948 there were nine official members and seven unofficial members. The procedure of this Council, with the advice and consent of which all legislation is enacted and by which all expenditure from public funds has to be approved, is based on that of the Brit. House of Commons. There are three standing committees of the legislative council—the finance committee, the law committee and the public works committee—and select committees are from time to time set up to advise on matters before the council. In 1947 the secretary of state for the colonies approved pro-

posals for a revision of the constitution, providing for the estab. of a municipal council (to which many of the functions of the present gov. would be delegated), and consisting of fifteen members representing the Chinese, and fifteen the non-Chinese sections of the pop. At the resumption of civil gov. in 1946 the normal *judicial system* of H. K. was restored. The Supreme Court of H. K. has the same jurisdiction as the English Courts of Kings Bench, Common Pleas and Exchequer have or had in England, and is a Court of Over and Territor and Gaol Delivery, Assize and Nisi Prius, with jurisdiction in Probate, Divorce, Admiralty, Bankruptcy and criminal matters; and it is also a Court of Equity with such and the like jurisdiction as the Court of Chancery has or had in England.

**Education.**—H. K. has a voluntary system largely in the hands of gov. and of missionary bodies. The present system may be said to have started in 1913 when the Education Ordinance, from which the director of education derives his legal powers came into operation. The medium of instruction in schools varies from one category of school to another. In some, Eng. is the sole language; in others, Chinese; and a number of schools have classes in both languages. The grant-aided schools mainly use Eng. The military schools cater for the children under the age of eleven of serving officers and men and the staff is recruited from the Army Educational Corps and the Queen's Army schoolmistresses. Normally secondary education in Eng. is to a great extent in the hands of gov. and grant-aided schools. Within the urb. area in 1941 there were 649 schools, 529 of which were private schools (i.e. those not in need of, or which do not merit gov. subsidy) 91 subsidised, 9 gov. and 20 grant-aided. Education in H. K. is not free although 10 per cent of the pupils in gov. schools are awarded free places. The univ. was incorporated in 1911 and opened formally in 1912. In 1941 a new science building was opened a few weeks before the outbreak of war. The supreme governing body of the univ. was the Court, with life, *ex officio* and nominated members, the governor as chairman and a Council or executive committee, and a senate composed of the vice-chancellor, the director of education and the profs. and readers. There were four faculties, medical, engineering, arts and science; and the total number of students was a little over 500. Early in 1946 the secretary of state for the Colonies appointed a committee to advise on the future of the univ. An immediate effect of the fall of the Colony was the grievous damage wrought on the univ. buildings by wholesale looting. The only buildings to escape serious damage were the main floor in which was housed the main library and the Fung Ping Shan Chinese library and the Fung Chi Ngong School of Chinese Studies. Matters of public health are the responsibility of the Medical Dept., the functions of which are separated into different divs., e.g. hospitals, health, investigation and relief.

**Communications.**—An electric tramway with 19 m. of track and new motorizing roads were opened before the war. Over 400 m. of roads are maintained, 173 m. of which are on the Is. of H. K., 106 on Kowloon and the remainder in the New Ters. About ninety per cent of these roads are of modern metalled construction. The road system suffered considerably from neglect during the Jap. occupation. Two new roads, both in the New Ters., were built during the Jap. occupation: one to the top of Tai-mo-shan built to serve as a Jap. early warning radar station, whilst the other, leading to Saikung vil., was designed to facilitate Jap. military operations against the Chinese guerrillas. Kowloon is the S. terminal of the railway system extending to Hankow. From Shum-chun on the border of the New Ters. N. to Canton the route is now operated by the Canton-Hankow Railway, from Shum-chun S. to Kowloon (a distance representing 36 km. out of a total of 183 km. from Kowloon to Canton) the railway is operated by the H. K. gov. and is known as the Brit. section of the Kowloon-Canton Railway. At the present time, pending the conclusion of a new agreement, the Brit. section is receiving a share amounting to 20 per cent of the receipts and a terminal charge of 20 cents per ton on all traffic originating at Kowloon. H. K. is a most important link in the net-work of post-war aviation but to retain its place it requires a first-rate modern aerodrome. A weekly flying-boat service to the United Kingdom was set up by B.O.A.C. in Aug. 1946 (a six-day journey) and the colony is connected by the services of Chinese air transport companies with Shanghai, Nanking, Chungking, Kunming, Hainan Is., and Canton. The colony's only airfield, Kai-tak, is to the N.E. of Kowloon, a fifteen min. drive from Kowloon's chief hotel. Situated under a steep range of hills rising at one point to 1400 ft. it is an airfield which by modern standards leaves much to be desired. The Jap., during their occupation, carried out a considerable extension of this aerodrome, doubling its size at the expense of adjacent Chinese houses and fields and of the former civil airport buildings; but despite these improvements the aerodrome remained inadequate for heavy aircraft.

**History.**—Prior to 1841 the Is. now known as H. K. was inhabited by a few fishermen, stone-cutters and farmers, and provided a notorious hiding-place for smugglers and pirates. In that year it was occupied by Brit. forces partly as a reprisal for the treatment of Brit. merchants in Canton, and partly to provide a secure basis for trading with S. China merchants. The cession of the Is. to the Brit. Crown was confirmed by the treaty of Nanking in Aug. 1842. The convention of Peking of 1860 added the Kowloon Peninsula and Stonecutters Is. to the Crown Colony and under a later convention of Peking, concluded in 1898, the area known as the New Ters., including Mile Bay and Deep Bay, was leased to Great Britain for 99 years. Nearly a century of unbroken peaceful development fol-

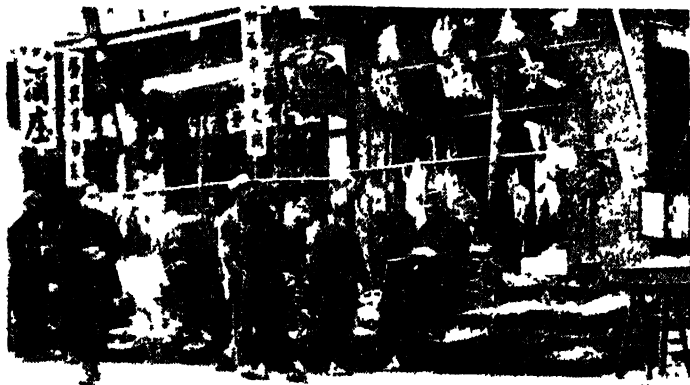
lowed the treaty of Nanking. One of the world's greatest harbours grew up naturally in the colony's enclosed waters; the freedom of the port and the freedom of entrance and departure for all persons of Chinese race were preserved in accordance with a policy which ensured for the colony the rôle of entrepôt both for the trade of and for the labour of China's S. provs.; afforestation, extensive reclamation of foreshore, cultivation of the lower slopes, and a net-work of motor roads cut into the hills, combined with the steady and natural growth of Victoria itself, to present to the ocean-going ships which lay in the harbour in 1941 a picture very different from that which met the first merchantman who watered off the S.W. coast of the Is. or the first pioneers who explored the hostile hills in quest of pirates; besides which sanitation, anti-malarial work and public health administration combined have removed all evidence of the 'plague spot' which the new colony was thought to be a century ago. The rich interior of the mainland was linked by railway with the wharves and warehouses of H. K.; schools and a univ. were estab.; Chinese, European and Amer. air-lines met in the colony's airport; shipyards and docks able to accommodate the world's largest liners were constructed; light industries were started and prospered. Also, if of doubtful benefit to H. K., the colony became known as an impartial refuge during the inter-racial strife which ensued in China after the inauguration of the Chinese Republic in 1911 and, later, when China was attacked by Japan. In H. K. the shadow of Jap. aggression was scarcely perceptible when Manchuria was attacked; it darkened somewhat with the fall of Shanghai in 1937 and lay over the colony, heavy and menacing, after the fall of Canton at the end of 1938. The colony's pop. increased to over one and a quarter million, swelled by homeless refugees from S. China, who could be neither housed nor turned away. In ascertaining, before Japan entered the Second World War, how many persons would have to be fed and sheltered during air raids a census taken in 1941 showed that 709,291 persons were living on the Is.; 381,431 in Kowloon, and 151,000 in boats, giving a total of 1,441,725. There were then just under 8000 Britons exclusive of the garrison. This census showed that so great was the congestion that at least 20,000 people were habitually sleeping in the streets.

When Japan suddenly entered the Second World War on the side of her Axis (g.v.) associates, her forces at once bombed H. K. (Dec. 7). The defences of the Is. and of Kowloon had been much strengthened and these, supplemented by the mountainous nature of the colony, were apparently believed to offer every probability of successful resistance. It is, however, to be borne in mind that under the Washington Treaty of Limitation of Naval Armaments, 1922, the contracting parties agreed to maintain the status quo in regard to fortifications and naval bases. The Jap. gov. denounced the treaty at the



end of 1934 and, in consequence, the treaty lapsed on Dec. 31, 1936. Until the latter date, therefore, the Brit. Gov. were precluded from erecting additional fortifications at H. K. But apart from this, it was always obvious to the authorities that the position of H. K. would become very precarious, lying as it does so near to the homeland of Japan, in the event of war with that country. The garrison, aided by the Navy, made a desperate fight against huge odds. By mid-Dec. Kowloon was in Jap. hands and the garrison of that peninsula prepared to withdraw into H. K. is. Jap. land artillery,

commanders. The garrison consisted of Regular and local Volunteer elements, Brit., Indian and Chinese, and a fine contingent of Canadian troops. But air force activity was necessarily restricted nor could Brit. ships operate effectively in such narrow waters. Thus the tiny Canton gunboat, *Hobbs*, was destroyed by her own crew after fighting to the last moment, while her sister ship, the *Cicala*, was sunk by bombs and all the small harbor craft were set on fire. Ashore, everything which could be of service to the enemy, including wharves, docks, equipment and stores, was wrecked or burned.



SHOPS IN A HONG KONG STREET

as seen from the sea

naval forces and bombers were now ceaselessly bombarding the colony and trying to disrupt the retirement from Kowloon by plunging shells into the narrow stretch of water separating Kowloon from H. K. All Brit. troops were also withdrawn from the 300 sq. m. of leased ter. on the mainland. Air raids on the is. were not remarkably effective owing to the fact that rocky Victoria peak was honeycombed with first-rate shelters and supplies were protected by the hills. Victoria itself, built partly in a solid block on the Kowloon Peninsula on the mainland, partly on reclaimed land or steep hillside on the is. opposite, was now, together with its naval yard, under enemy fire from the mainland; while the less densely inhabited S. side of the is. could now be bombarded by long range heavy guns of the Jap. fleet lying near the is. of the S. On Dec. 17 Sir Mark Young, governor of H. K., rejected a Jap. proposal to enter into negotiations for surrender and refused to accept any further communications from the Jap.

in accordance with the "scorched earth" policy, in the closing days of the siege. Civilians were remarkably steady under fire, but by this time (Dec. 18) the spectre of thirst was haunting the people. Yet the next day the Brit. guns silenced no fewer than five Jap. batteries, while anti-aircraft fire brought down a mass Jap. bombers. But on that day the Jap. made landings in considerable force and also cut telegraphic communications with H. K. Later in the day after stiff fighting they gained possession of Victoria City and most of the is. By now the enemy had more than 20,000 men on the is. alone and were using their undisputed command of the air to full advantage. The moment Jap. troops landed, small units, armed with Tommy-guns, mortars and grenades, made for the strong points marked on their detailed maps. Others penetrated the A.R.P. tunnels and, by using connecting passages, with which they appeared to be familiar, began to sow confusion among the defenders. Although

the enemy indulged in their usual indiscriminate bombing before the final assault, civilian casualties never exceeded 150 a day. Indeed civilian casualties, both European and Chinese, seem to have been surprisingly light, possibly because no fighting occurred in the teeming central dists. of Victoria City. Gov. House was badly damaged by bombs. The Military Hospital was hit 29 times. Many fine houses on the Peak were wrecked; but the splendid new building of the H. K. Bank stood up well to shelling. The Gloucester Hotel was only slightly damaged and the Queen Mary Hospital was neither bombed nor shelled. The gallantry of the garrison was beyond praise and the Indian troops showed magnificent bravery. But the colony was literally rocked from the repeated explosions when the last relentless measures were taken before shortage of water compelled the defenders to ask for terms. In the interests of humanitarianism the garrison was at last forced by the horror of thirst if not of actual want to negotiate a surrender. Among the many examples of courage in the battle for H. K. was the heroism of an officer, who, having defended his munition store with great tenacity blew himself up with the store rather than allow it to fall into the enemy's hands. Another gallant episode was an all night fight for the Repulse Bay Hotel on the S. side of the Is., during which the defenders, using an old archery set found in one of the rooms, fired flaming arrows into the underground where the Jap. were lurking. The garrison of 'Tai-pans', consisting mainly of over-age business men, holding the N. Point Power Station, resisted for days, firing rifles from every window at the oncoming enemy. A force of Indians fought a remarkable rearguard action down the entire length of Nathan Road. Kowloon kept their fire up while embarking, and continued to fire as they moved off. But the odds were always against the defence and while the mainland was being evacuated, the whole 32 sq. m. colony shook from many explosions, including the blowing up of a ferry boat loaded with dynamite, which shattered every window of the Is. On the 23rd Canadian troops suffered and inflicted heavy casualties, their commander, Brig. Lawson and his chief of staff, Col. Hennessy, both being killed. The actual date of surrender was Christmas Day and one Brit. party succeeded in escaping from the Is. in speed boats on Christmas night. Thus ended, temporarily, the hundred years of Brit. rule of the colony of H. K.

The colony remained in Jap. hands for some three and a half years. The pop. quickly fell from 1½ million to less than half that number. In the face of increasing oppression and brutality the fundamental loyalty to the Allied cause of the Chinese who remained was never in doubt: parts of the New Terr. remained in the hands of Chinese guerillas throughout the war, in spite of the most vigorous punitive measures which the Jap. could invoke; passive resistance to every Jap. enterprise was adroitly calculated; Allied subver-

sive organisations had no difficulty in securing the help of every class of Chinese resident in the colony. H. K. was eventually liberated by units of the Brit. Pacific Fleet on Aug. 30, 1945. The Jap. forces were taken prisoner and a military administration was set up under Rear-Adm. Harcourt as commander-in-chief. The military administration lasted until May 1, 1946, considerable headway having been made in the previous seven months with the work of reconstruction, a result largely due to the cheerfulness and resilience of the Chinese pop. Civil gov. was restored on the above date when Sir Mark Young resumed the governorship of the colony and the legislative and executive Councils were reconstituted. In June 1946 the gov. (as in other colonies) set up a committee to consider the relative merits of various schemes for the development and welfare of the colony under the provisions of the Colonial Development and Welfare Act, 1945. War crimes trials during 1946 were set up in H. K. by royal warrant. Up to the end of that year some fifty Jap. had been tried, nine condemned to death, nine to imprisonment for ten years or longer, twenty-six to shorter terms and six acquitted; some seventy-eight prisoners were then still awaiting trial. The trials included those of Col. Noma who was head of the Jap. Gendarmerie during the occupation and Col. Tokunaga, who was in charge of all prisoner of war camps; while amongst those awaiting trial were Adm. Sakonjo, accused of ordering sixty-nine prisoners of the Brit. motor vessel *Hehar*, sunk in the Indian Ocean, to be butchered on the deck of a Jap. cruiser, and Col. Kogi, the public prosecutor at the 'bloody trials' of 1943 as a result of which forty local residents of H. K. lost their lives.

In anticipation of the fall of Shanghai (May 24-25, 1949) and the implicit threat to H. K. from a further Communist advance southward, the cruiser *Janataca* arrived on May 29 to strengthen the colony's defences, while a curfew of three months' duration was imposed in the frontier dists. Later Mr. A. V. Alexander, minister of defence, paid a visit to H. K. to inspect its defences and, subsequently, the Brit. Gov. sent strong reinforcements.

Pop. (estimated, 1917) about 1,750,000, the great majority being of Chinese race. There were in the Colony, excluding Services personnel, about 6000-7000 Brit. subjects from the United Kingdom and the Dominions, 2500 Indians, 870 Portuguese citizens, 3000 Brit. subjects of Portuguese race, many of whom had spent the war years in Macao, and also 250 Amers.

See E. J. Eitel, *Europe in China: the History of Hong Kong from the Beginning to the year 1882, 1895*; Dolly (pseud.) *Tales of Hong Kong, in Verse and Story*, 1902; J. Carter, *In the Wake of the Sailing Sun* 1908; S. H. Peplow and M. Barker, *Hong Kong, around and about*, 1931; L. Forster, *Echoes of Hong Kong and beyond*, 1933; G. R. Sayer, *Hong Kong: Birth, Adolescence and Coming of Age*, 1937; *Mut-lai in Hong Kong* (report of com-

mittee appointed by Sir Wm. Peel (Cmd. 5121, 1936); *Mut-Tai in Hong Kong and Malaya* (report of Woods committee) (Colonial No. 125), 1937; Winifred A. Wood, *A Brief History of Hong Kong*, 1940; also ann. departmental reports, Blue Books, Gazettees, etc.

G. Bentharn, *Flora Hongkongensis: a description of the flowering plants and ferns of the island of Hong Kong*, 1801; S. B. J. Skertchly, *Our island: a naturalist's description of Hong Kong*, 1893; J. C. Kershaw, *Rutlerflies of Hong Kong and South-East China*, 1905; S. T. Dunn and W. J. Tutcher, *Flora of Kwangtung and Hong Kong* (H.M.S.O.), 1912; T. F. Claxton, *Climate of Hong Kong 1894-1929*, 1931; G. A. C. Herklots, *Flowering Shrubs and Trees*, 1938, *Orchids*, 1937, and *The Birds of Hong Kong*, 1946.

Honiton, mkt. tn. on the Otter, 16½ m. E.N.E. of Exeter by rail, in Devonshire, England. It is famous for its lace-making, an industry introduced by the Flemish in Queen Elizabeth's reign. Pop. 600.

Honnell, health resort, with a mineral spring, beautifully situated on the Rhine, 8 m. S.E. of Bonn in the Rhineland, Germany. Pop. 8900.

Honolulu, city, port, and co. of Hawaii, Pacific Ocean (belonging to U.S.A.), situated on the S. coast of the island of Oahu. It is the cap. of Hawaii. In 1907 an Act was passed by which the ls. and co. of Oahu, and the small ls. adjacent became the 'city and co. of H.'. The chief industries are the manu. of machinery and carriages, rice-milling, and shipbuilding. The city, too, has a plentiful water supply, and hence the vegetation is luxuriant. There is a natural harbour which is formed by a lagoon within the coral reef which has 22 ft. of water at the entrance at high tides, and can hold a large number of ships. This and Pearl Harbour (q.v.) are the only safe ports in the archipelago. Extensive naval works have been constructed here and military works at Honolulu. From 1820 to 1893 the city was the residence of the sovereign, and is now the seat of gov. and the foreign consuls. It is an entrepôt for European and Indian goods, and has communication by steamship with San Francisco, Seattle, Vancouver, Victoria, Sydney, and Chinese and Jap. ports. The univ. of Hawaii is situated at H. The city has electric transp. Pop. of city and co. 268,900. See HAWAII.

Honors, see HONAWAR.

Honorius (reigned A.D. 381-423), emperor of Rome, b. at Ravenna. Three things notably characterise his reign namely, the inroads of barbarians, the energy of Stilicho, and the pusillanimity of the emperor. Stilicho was appointed H.'s guardian during his minority, and it was he who quelled the revolt of Gildo in Africa (397) and thrice drove the Goths and Huns from Italy. In 400 he defeated the combined forces of Alaric and Radagaisus; in 402 he defeated Alaric alone at Pollentia, and a year later he put Radagaisus to death near Frécula. H. executed Stilicho in 408, and so was powerless to repulse Alaric, when he captured Rome a second time in 410. Ataulphus,

Alaric's son, married Placidia, H.'s sister, but neither he nor H., nor any of the host of usurpers could maintain even a semblance of imperial power. See Gibbon, *The Decline and Fall of the Roman Empire*, 1766-1788.

Honorius I., pope (625-37), succeeded Boniface V. He wrote a letter to Edwin, king of Northumbria, urging him to be true to the new faith, and at his request conferred the pallium on the bishops of York and Canterbury. The Celtic Church was a source of continual anxiety to him, as it failed first of all to acknowledge his supremacy, and secondly continued to observe Easter according to a rule for fixing the time that Rome had discarded, and in its own way. H. also corresponded with Sergius, patriarch of Constantinople, who maintained that the twofold nature of our Lord was animated by a single will. H. supported this heresy, which was called Monothelism and was anathematised, with the Monothelite heretics, by the Council of Constantinople in 638. See J. Chapman, *The Condemnation of Pope Honorius I.*, 1907.

Honorius II., pope (1124-30), was Cardinal Lambert Scannabecchi, bishop of Ostia, before his election to the papal chair. Boleseged by Roger, count of Sicily, in Benevento, H. afterwards countenanced his investiture as duke of Apulia and Calabria. He excommunicated Conrad, Lothair's rival for the throne of Italy.

Honorius III., pope (1216-27), was Cardinal Cencio Savelli before he succeeded Innocent III. A zealous supporter of St. Dominic, he failed to induce Frederick II. to lead a crusade against the Muslims, and was so unpopular at Rome that he was repeatedly driven beyond that city's gates. See monograph by J. Clausen, 1895, and A. Keintner, *Papsttum und Krieg unter Honorius III.*, 1935.

Honorius IV., pope (1285-87), was Cardinal Giacomo Savelli. He favoured Charles of Anjou, and actually proclaimed his expedition against the men of Aragon a 'holy war'. See M. Prou (ed.), *Les Registres d'Honorius IV.*, 1889.

Honour, legal description of a seignior of two or more manors under the control of one baron and subject to a single jurisdiction. See MAJOR.

Honour, Maids of, see HOUSEHOLD, ROYAL.

Honourable (from Fr. *honorable*, and Lat. *honorabilis*, deserving honour), title of honour prevalent in the United Kingdom and her colonies and also in the United States. In the United Kingdom marquesses should be addressed as 'most H.'; earls, viscounts, barons, and privy councillors as 'right H.'; whilst the title of H. is reserved for maids of honour, judges of the high court, and the sons and daughters of peers. Formerly the style was loosely applied. Major-gen. Lowther, whose father was a merchant, is described on his tomb in Westminster Abbey as 'The Hon.' (1746). In America and the colonies judges and members of state legislatures or the executive councils have a right to the distinction.

**Honourable Artillery Company (H.A.C.).** As a military force this is one of the most ancient in the world, having been granted its Charter by Henry VIII. in 1537. At this time 'artillery' included every kind of missile, and this company was a Guild of Archers. This Guild became a training school for the London Train Bands, and was always in the forefront of military training units. Many famous people have served in its ranks at various periods, including the poet Milton, Marlborough, Wren, and the great Fr. engineer Vauban. The Corps served in the S. African war 1899-1902, and during the First World War it raised three infantry battalions and seven batteries of artillery, which served in France, Flanders, Italy, Palestine, and Aden. Its King's Colour is unique, in that it is the only King's Colour in the Brit. Service which bears all the battle honours, these being usually on the Regimental Colour. The headquarters of the H.A.C. are at Artillery House, Finsbury, London. An Amer. off-shoot of this Company is the present 'Anc. and Honourable Artillery Company of Boston, Massachusetts, founded in 1683 by four members of the H.A.C. who emigrated. In the Second World War the 12th (H.A.C.) Regiment, Royal Horse Artillery took part in many battles on the It. front, 1944-45. See Maj. G. Gould-Walker (ed.), *The Honourable Artillery Company in the Great War 1914-19*, 1930.

**Honshu, see under JAPAN.**

**Honthelm, Johann Nikolaus von (1701-1790),** Ger. historian and theologian, educated by the Jesuits. From 1732-79 he was dean of St. Simeon's in Trier, his native place, and from 1738-47 represented the interests of the archbishop-electoral at Koblenz. From 1748 he was suffragan bishop of Trier, and he was also pro-chancellor of the univ. Under the pen-name of 'Febronius,' he discussed the limits of papal authority in what became a famous treatise. His three hist. of Trier are in the highest degree erudite.

**Honthorst, Gerard van (1590-1656),** Dutch painter, has left many pictures which are now to be found in many galleries of Europe. B. in Utrecht, he studied under Albrand Bloemaert, migrated to Rome, where he executed his masterpiece 'Christ before Pilatus.' In Whitehall, as in the Palace of the Hague, etc., he painted allegorical subjects, and there are still in existence many excellent portraits from his hand, as, for example, the 'Countess of Bedford' in Woburn Abbey. He is noted specially for his night studies.

**Hontrop, coal mining vil. of Westphalia, Germany, in the dist. of Arnsberg.**

**Hooed (Land-defenders),** term first used under the early monarchy of Hungary to describe the national champions. During the revolution of 1848 it was used of the patriotic party, and after independence was established (1848) was applied to the *Landwehr*. In 1918 it was applied to the whole army.

**Hooch, Pieter de (1632-81, or later),** Dutch painter, b. near Rotterdam, worked at Delft. Like Hobbema and Cuyp, he

was held in small esteem by his contemporaries. A pupil, perhaps, of Rembrandt, whose style has left an impress on his work, this artist has left a few, but, in their way, exquisite pictures of native interiors. His clean and cheerful scenes intimate an earnest appreciation of the joys of domestic life and a warm love for sun and light. See Von Hofstede de Groot, *Catalogue raisonné* 1907; E. Fromentin, *Masters of Past Time* (trans.), 1910.

**Hood, Sir Alexander, see BRIDPORT, VINCOUNT.**

**Hood of Avalon, Arthur William Acland, Baron (1824-1901),** Eng. admiral, entered the navy in 1836. During the Crimean war he was with the naval brigade before Sebastopol, and in the China war participated in the action of Fatsan Creek (1857) and in the seizure of Canton (1858). Director of Naval Ordnance (1869-73), he finally rose to the rank of First Sea Lord of the Admiralty (1885), when his conservatism proved a formidable obstacle to crying reforms.

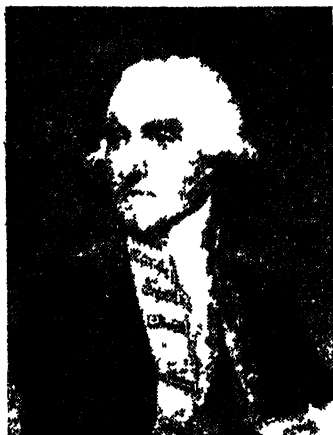
**Hood, Sir Horace Lambert Alexander (1870-1916),** Brit. rear-admiral; b. in London; 3rd son of 4th Viscount H. Cadet at age of twelve. Lieutenant, 1890; on the *Trafalgar*, 1891-92. Until 1895 studied gunnery ashore and performed staff duties. His first experience of war was under Egyptian gov. in gunboat on Nile, 1897. At Athara and Omdurman. Commander, 1898. Captain, 1903. Shore-light, Somaliland, 1904. Commanded college, Osborne 1910-13. Rear-admiral, 1913. In command of Dover flotilla that secured Eng. Channel on outbreak of the First World War. While ably assisting Beatty with a battle-cruiser squadron in Jutland fight, perished in wreck of his flagship the *Invincible*, whose magazine was exploded by a Ger. shell, May 30. See J. S. Corbett, *History of the Great War, Naval Operations*, 1923.

**Hood, John Bell (1831-79),** Amer. soldier, graduated from the military academy at West Point in 1853. On the declaration of Civil war he joined the Confederates, and after the battle of Gaines's Mill (1861) was promoted to major-general. At Gettysburg (1862) he was wounded and after the battle of Chickamauga (1863) lost one of his legs by amputation. Disaster attended him on winning the temporary command of the Tennessee army, and at the battle of Nashville his forces were utterly overwhelmed (1865).

**Hood, Robin, see ROBIN HOOD.**

**Hood, Samuel, Viscount Hood of Whitby (1724-1816),** Brit. admiral, son of a clergyman and brother of Alexander Hood, first Viscount Bridport (q.v.), entered the navy in 1741. From 1780 to 1783 he was fighting in the West Indies, at first under Rodney, but afterwards as commander-in-chief. In 1781 he made an unsuccessful attempt to prevent the Fr. admiral, De Grasse, from blockading Chesapeake Bay, and the following year sailed likewise, in spite of adroit manoeuvres, to dislodge the Fr., again under

De Grasse, from the is. of St. Christopher. The tactics he adopted in extricating him self from this engagement have again and again been commended by naval experts. Finally, he assisted at the discomfiture of his old enemy in the action off Dominica (1783). In 1784 he was returned to Parliament, the unsuccessful candidate being none other than Fox. During the



SAMUEL, FIRST VISCOUNT HOOD

Napoleonic wars he succeeded in occupying Corsica (1794). He was created viscount in 1796 and made governor of Greenwich Hospital. See J. H. Rose, *Lord Hood and the Defence of London*, 1922.

**Hood, Sir Samuel** (1762-1814), Eng. vice-admiral. Joined the navy in 1776, and from that year till his death was an active service almost without remission. He took part in the action off Ushant (1778); for the next two years he was fighting in the W. Indies, and in 1791 effected a brave rescue of some shipwrecked sailors outside the harbour of Jamaica. As commander of the *Zetland* he distinguished himself for his intrepidity and promptitude at the battle of the Nile (1797). In 1802, being promoted to commodore, he almost drove the Fr. out of the West Indies, and in 1805 seized four Fr. frigates near Rochefort, but this action unfortunately cost him an arm. Commander of the *Centaur* in 1808, he was publicly decorated by the king of Sweden for his brilliant seizure of the Russian gun-ship *Senulud*. Useful reforms followed his promotion to commander-in-chief of the East Indies (1812).

**Hood, Thomas** (1790-1815), Eng. poet, b. in London of Scottish descent, ultimately began his literary life by contributing to the *London Magazine* at the age of twenty-two, and through this connection

he made acquaintance with many of the leading writers of the day. He pub. *Whims and Oddities* (1826), and began to publish his *Comic Annual* four years later. He was abroad from 1835, but returned to England in 1840, and in the following year took up the editorship of Colburn's *New Monthly Magazine*. In the year before his death he started *Hood's Magazine*, and issued *Whimsicalities*. His works were collected by his son and daughter (1862-51). He is best known as a humorist and as such he occupies a very high place in Eng. letters. He was unduly addicted to the use of the pun, a now discredited form of wit, but he had a happy way of playing upon words that redeems his jokes from the charge of silliness. Though primarily a humorist, he could write in other veins. *The Dream of Eugene Aram* (1839) is one of his most famous poems, second only to the pathetic and beautiful *Bridge of Sighs*. *The Song of the Shirt*, pub. anonymously in *Punch* in 1843, attracted as much attention to the lot of the worker as *Oliver Twist* did to the abuses of the workhouse system. The *Memorials of Thomas Hood*, by his daughter, appeared in 1860 and biography by W. Jerrold in 1907 and W. H. Hudson in 1915. See also W. Jerrold, *Thomas Hood and Charles Lamb, the story of a friendship*, 1930.

**Hood**, part of academic dress. It is a development of the monk's cowl, and indicates by its colour, material, and shape, the faculty in which the owner has graduated, the status to which he has attained, and the university to which he belongs.

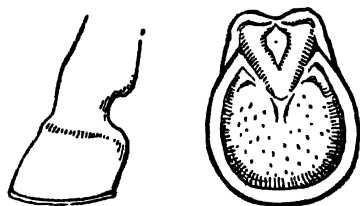


THOMAS HOOD

**Hood, Mount**, extinct volcano, 11,225 ft. high, belonging to the Cascade Range, in the N. E. of the Clackamas co. of Oregon, U.S.A. is situated 30 m. E. of Portland. Pines and fir cover its lower slopes. On one side is a sheer descent of 7000 ft. Its summit is glaciated.

**'Hood,' The**, Brit. battle-cruiser and till the Second World War, the show ship

of the Royal Navy. She carried a heavier armament than any other ship in the Fleet with the same speed. Begun in 1916, launched in 1918, and completed in March, 1920. Her displacement was 42,100 tons and her speed was over 30 knots. The original cost was about £6,025,000 but a further £987,474 was spent on repairs and reconstruction when she was taken out of commission in 1929. She was again refitted in 1939. Her outstanding features were the huge area covered by heavy armour, strong framing and the general scheme of protection. Her eight 15-inch guns fired a shell of nearly 2,000 lb., their extreme range being 17 m. In addition there were twelve 5.5 inch guns, as well as lighter armament. The ship was sunk off Greenland by a shell from the new Ger. battleship 'Bismarck' at 13 m. range, the shell penetrating a magazine so that she blew up and sank in a few minutes (May 24, 1941). The end of the H. was an almost unbelievable nightmare to the Brit. public and an almost inexplicable disaster in naval hist. Of her complement of over 1300 only 3 were saved. See further under 'BISMARCK', THE, and NAVAL OPERATIONS IN SECOND WORLD WAR.



HOOF

Hoofs are horny boxes which protect the sensitive parts of the foot of an animal. The possession of H. is a distinction on which the large order Ungulata is based. They are equivalent to the claws and nails of other mammals, and are renewed from the superior to the inferior border like the human nail. The flexibility of the H. is promoted by a fluid secreted by the keratogenous (horn-producing) membrane. The so-called cloven H. has been evolved for walking and climbing on irregular surfaces by the formation of separate digits on the foot, each bearing its own distinct H. The horse's H. is too brittle for road wear, and the art of shoeing was practised as early as 333 B.C.

Hook, Pieter Corneliszoon (1581-1647), Dutch dramatist and historian, is, perhaps, after Vondel, the greatest literary genius Holland has so far produced. Born in easy circumstances—his father was for some time burgomaster of Amsterdam—H. spent over three years travelling in Italy and Germany, and after studying law and hist. at Leyden Univ. (1606-09), received a highly remunerative appointment from the prince of Orange. The value of his European culture is manifest in his fine

pastoral *Granida* (1605), his tragedy *Geeraardt van Velsen* (1612), and his monumental *Nederlandische Historien 1555-58* (1642-54). See G. Brandt, *Leven van P. C. Hooff*, 1677; Sir E. Gosse, *Northern Studies*, 1879; and P. Prinsen, *P. C. Hooff*, 1922.

Hooge, tn. Just E. of Ypres in Flanders. Its situation caused it to be involved in most of the operations around Ypres in the First World War. In May 1915 heavy Ger. attacks were launched against the E. and N.E. fronts of the Ypres Salient, and by the 9th the Brit. line had been pushed back to Hooge on the E. Later in the month the Gers. gassed the place and secured a footing in it. During the Ger. offensive of April 1918, H. was again the scene of much fighting, but the Ger. main effort was against the S. portion of Ypres more than the E. In the Allied counter-offensive the Ger. positions at H. were overrun by the Brit. (See also FRANCE AND FLANDERS, FIRST WORLD WAR CAMPAIGNS IV.)

Hoogezand, tn. in Holland, 18 m. E.S.E. of Groningen. Up to 1650 the dist. in which this tn. is situated was a waste, but by successive toll it has been transformed into fertile fields. Pop. 11,000.

Hoogly, or Hooghly, see HUGLI.

Hoogstraten, Samuel D. van (1627-1678), Dutch painter, b. at Dordrecht, studied in the school of Rembrandt. He became provost of the mint at Dordrecht, 1671. Good examples of his rare works being in Amsterdam and Vienna.

Hook, James Clark (1819-1907), Eng. painter, studied at the Royal Academy, and in 1846 set out on his foreign tour, as the Academy had awarded him the travelling studentship for his 'Rizpah watching the Dead Sons of Saul' (1846). So far he had mostly chosen romantic or historical subjects, like 'The Finding the Body of Harold' (1845). But after his return from Italy and Paris, he embarked on his splendid series of Eng. sea and land scenes, among them being: 'A Rest by the Wayside' (1854), 'Luff Boy' (1859), which Ruskin so much admired; and 'Sea Urchins'. See A. J. Hook, *Life of J. C. Hook, R.A.*, 1932.

Hook, Theodore Edward (1788-1841), Eng. dramatist, journalist and novelist, b. in London, son of James H., a musical composer and composer of *The Lass of Richmond Hill*. Educated at Harrow; but his father, having discovered his son's precocious gifts as an author and composer, took him away from school so that he could practise them at home. This occupation was interrupted for a term or two at Oxford, but univ. discipline proved un congenial and H. returned to London to embark on a series of practical jokes, which are described in his autobiographical novel, *Gilbert Gurney* (1836), a novel which brought him fame and fortune. These pranks to-day seem remarkable only for their fatuity and they invariably involved the victims in physical suffering or pecuniary loss; but they delighted his contemporaries, and the Regent was so charmed with H., that he obtained for him the post of accountant-general and

treasurer at Mauritius at a salary of £3,000. This windfall was H.'s ruin. After five years of brilliant social success, he was accused of peculation and sent home under arrest. The attorney-general, however, ruled that there were no grounds for criminal proceedings and H. was released. He found employment in starting and editing a high Tory weekly paper, *John Bull*, in which disgraceful attacks, written by himself, were made on Queen Caroline and her Whig adherents. When his identity became known the Whigs were not slow to take vengeance: for, though the peculation in Mauritius was the work of a subordinate, H. was found by a board of enquiry debtor to the Crown for £12,000 through gross neglect of duty and he was imprisoned for debt from 1822 till 1825. In the last sixteen years of his life, besides journalistic writing, he pub. 38 novels. These attained a popularity second only to Scott's: now, unread and well-nigh unreadable, they are of interest only to the literary historian for their considerable influence on the early work of Dickens. Wrote *The Soldier's Return* (a comic opera, 1805), *Catch Him who Can* (also an opera, 1806), *Sayings and Doings* (3 series, 1826-29), *Maxwell* (1830), *Jack Brag* (1836). He was editor of *The New Monthly Magazine* from 1836 until his death and had the honour of being satirised by Disraeli and Thackeray. Though making a large income he was always in difficulties and, after a long struggle with broken health and spirits, he died at Fulham. By the testimony of all who knew him, from Coleridge to Barham, the charm of his conversation was irresistible and unfeeling, and his powers of memory and improvisation phenomenal. See R. H. Barham, *The Life and Remains of Theodore Hook*, 1819; M. F. Brightfield, *Theodore Hook and his Novels*, 1928, and A. Repplier, *The Laugh that Failed*, 1936.

**Hookah** (from Arabic *hugga*) or **Nargileh**, water tobacco-pipe popular in India, Persia, Turkey, and other countries of the E. The tobacco bowl is connected by a wooden tube with a water vessel so that the smoke is cooled in the liquid before passing through a flexible tube up to the smoker's mouth.

**Hooker, Robert** (1635-1703), Eng. physicist, b. at Freshwater, in the Isle of Wight, was a pupil of Dr. Busby at Westminster; and at Christ Church, Oxford, worked in the laboratory of Robert Boyle. In 1661 he taught geometry at Grusham College, and in 1677, after being surveyor to the City of London, became secretary to the Royal Society. From a paper read before the Royal Society in 1681 it is evident that H. had brought the theory of the telegraph to a much more advanced stage than the Frenchman, Guillaume Amontons (q.v.), and nearly twenty years sooner. Yet although the method of accomplishing telegraphic communication was clearly explained by H. and its practicality demonstrated by Amontons, it continued to be regarded as of no practical value and was only applied to useful purposes a century later. The range of his invention was

phenomenal. Among his contrivances were a double-barrelled air-pump, the spirit-level, anerometer, marine barometer, the balance-spring of watches, the anchor-escapement of clocks, and a sea-gauge. He was one of the earliest workers with the microscope; his *Micrographia* (1667) contained the first description of plant cells, as well as many other accounts of microscopical anatomy. H.'s Law in physics is named after him. His regrettable quarrel with Newton arose out of the fact that he believed, rightly it seems, that he had already discovered certain of his rival's principles, especially as to gravity and the laws which rule celestial motions.

**Hooker, Sir Joseph Dalton** (1817-1911), Eng. botanist: b. at Halesworth, Suffolk; son of Prof. Sir W. J. Hooker; took his M.D. degree at Glasgow (1839), and as assistant-surgeon accompanied Sir James Ross to the Antarctic in the *Erebus*. His foreign tours were all fruitful in scientific and especially botanical discoveries, which were fully described in his *Flora Antarctica* (1841-47), *Flora of British India* (1874), etc. In 1865 he succeeded his father, also an eminent botanist, as director of Kew Gardens. A friend of Darwin, he championed his theories in his presidential address to the Brit. Association, 1868. President of the Royal Society, 1872-77. Other pubns. were a *Himalayan Journal* (1841) and *Genera Plantarum* (1862-83). Awarded O.M. in 1907. See monographs by L. Huxley, 1918, and F. Bower, 1919.

**Hooker, Richard** (1554-1600), Eng. theologian, was, through the patronage of two bishops, able to take his M.A. degree at Corpus Christi, Oxford, in 1577. For some time he was tutor to George Cranmer, grand-nephew of the archbishop, and Edwin Sandys, son of the bishop of London, and later became master of the Temple, whence his more popular rival, Travers, the Puritan, was eventually expelled. The eight books of the *Laws of Ecclesiastical Polity* were composed within the quiet of a country vicarage. Five books only were pub. in his lifetime, and considerable mystery attended the pub. of the last three during the half century following his death. The standard ed., is that of Kibble (1836), to which the inimitable life by L. Walton (1666) is fitly appended. In spite of its quaint and somewhat archaic flavour, H.'s work, by reason of its stateliness and charm, its lucidity, even where the thought is most profound, and its noble expression of a lofty intellect and unswerving religious enthusiasm, is justly deemed the fountain-head of modern literature in prose. His theory, which he gradually unfolds from book to book, is based first on the unity and omnipotence of law, 'whose seat is the bosom of God,' and secondly on the supremacy of calm and temperate reason, to which all things, even divine revelation, are finally referred. See V. Stanley, *Richard Hooker*, 1907, and L. S. Thornton, *R. Hooker, a Study of his Theology*, 1921.

**Hooker, Thomas** (c. 1580-1647), Amer. divine, b. in Marlfield, Leicestershire, Eng.

land. Preached in London and Chelmsford (1829); at the latter tn. Laud, bishop of London, dismissed him for nonconformity. He went to Holland (1830) and in 1833 emigrated with John Cotton and Samuel Stone to Boston, U.S.A., appointed pastor at Newtown (now Cambridge, Massachusetts); and in 1836 he founded Hartford, which he named after the bp. of his assistant, Samuel Stone. Some of his works include *A Survey of the Sum of Church Discipline* (1812), *The Soul's Implantation* (1827), *The Application of Redemption* (1836). See life in C. Mather, *Magnalia Christi Americana*, 1792; and M. Tyler, *American Literature*, vol. 1, 1878.

Hooker, Sir William Jackson (1785-1865), Eng. botanist, pub. his *Tour in Iceland* (1811). It was written from memory, as all his notes and drawings were accidentally burned on his way home. Other of his scientific works were *British Jungfermannia* (1816), *Muscologia Britannica* (1818), in which Dr. Faylor collaborated, and *Flora Scotica* (1821). From 1820 he held the chair of botany in Glasgow Univ., and from 1841 till his death was director of Kew Gardens. He collected an invaluable herbarium, and ed. three botanical journals besides numerous treatises on botany. See life by his son, Sir J. D. Hooker, 1903.

Hooker, Mount, peak of the Rocky Mts., between Brit. Columbia and Alberta, Canada, S.E. of Mt. Brown, about 32° 27' N. Its altitude is computed at 10,500 ft.

Hook of Holland (Hoek van Holland), vil. at the mouth of the Nieuwe Waterweg on a small peninsula in S. Holland. It is an important port for passengers and mail steamers from England.

Hookworm, parasitic worm found in warm climates, especially in Egypt, Ceylon, India and the W. Indies. It often lodges in the bare feet or in cracks in skin in human beings, producing 'ground itch'; thence, it enters the bloodstream, reaching the heart and lungs, and finally the intestines, where its eggs are produced and discharged to begin anew the life sequence. This painful disease is called ankylostomiasis, uncinariasis (q.v.), or 'miner's' anemia.

Hoole, John (1727-1803), Eng. poet and translator, b. in London. Was a friend of Dr. Johnson, and for forty years was a clerk in the E. India House. He is chiefly remembered as the translator of Tasso's *Jerusalem Delivered*, Ariosto's *Orlando Furioso*, and other It. poems; he also wrote sev. tragedies.

Hoopa, see HUPA.

Hooper, John (c. 1195-1255), Eng. divine, b. in Somerset. He was educated at Oxford, but on leaving the univ., and entered the Benedictine monastery at Gloucester, where he was ordained. He became an ardent reformer, and after a dispute with (a)rdiner had to flee from England in 1249 to avoid persecution. On his return he was made bishop of Gloucester in 1250, suffering imprisonment for some weeks. In 1252 he received the bishopric of Worcester in commendam, but in 1253 he was deprived of his office by

Queen Mary, and burnt for heresy at Gloucester. See J. Carr (ed.), *Writings of John Hooper*, 1843-52.

Hooping Cough, see WHOOPING COUGH.

Hoopoe, bird celebrated in literature, and conspicuous by its plumage and its large erectile crest. The common H. (*Upupa epops*) is about the size of a thrush, with a long, pointed and slightly arched bill. Its head and neck are of a golden buff, the former being adorned by the crest which begins to rise from the forehead and consists of broad feathers, gradually increasing in length, tipped with black, and having a subterminal bar of yellowish-white. The upper part of the back is of a vinous grey and the flight-feathers and tail are black broadly barred with white. This bird visits Britain during the spring and autumn migration, but seldom breeds in any part of the is. Besides the *U. epops*, there are *U. indica*, which frequents India and Ceylon, *U. longirostris*, common in the Indo-Chinese countries, *U. africana*, which inhabits S. Africa, and *U. marginata*, found in Madagascar.

Hoorn, tn. and seaport, Holland, prov. N. Holland, W. coast, Zuider Zee, 23½ m. N.N.E. of Amsterdam. It is a picturesque tn. with most interesting old buildings. There are noted cheese and cattle mktks., besides shipbuilding and saw-milling yards. Willem Schouten, who doubled Cape Horn and named it after his bp. was b. here. Pop. 11,000.

Hoosick Falls, vil. of Rensselaer co., New York, U.S.A., 24 m. N.E. of Troy. It manufs. paper, making, reaping and mowing machines, woolen and cotton goods, and flour. Pop. 5,000.

'Hoosier State,' see INDIANA.

Hoove, Hoven, or Tympanites, common derangement in ruminants due to the accumulation of gases in the rumen or first stomach. Is most frequent when animals are allowed to eat immoderately of clover. Before turning for the first time into luxuriant pasture, they should be well fed on dry stuff. Too much wet grass or frosted turnips or too many potatoes are other causes. The usual treatment is one wineglassful of turpentine in one pint of raw linseed oil. Failing this, the stomach is punctured with a trocar and cannula, or even a pocket knife, to liberate the gas. Stoppages due to foreign bodies, or to rupture or stricture, also cause H., and are very rarely cured. Small doses of chloride of lime sometimes give relief.

Hoover, Herbert Clark, thirty-first President of the U.S.A. b. at West Branch, Iowa, 1871. Descended from Andrew H., who was b. at Ellerstadt in the Palatinate and emigrated to the U.S.A. in 1788, settling in Pennsylvania. His own father, Jesse Clark H., was the vil. blacksmith of W. Branch. On both sides of his family he is of Quaker ancestry, and himself belongs to that faith. In 1896 he entered upon his career as mining engineer, became famous in his profession, and made a competence. At the outbreak of the First World War he was in London in furtherance of the Panama Exposition,



and was appointed chairman of the Committee for Relief in Belgium. When the U.S.A. declared war on Germany, President Wilson summoned H. home to become the food administrator. As such H. had none of the dictatorial powers with which similar officials were clothed in England and Germany. What he had to do was mainly by persuasion to induce people to save meat, flour and sugar principally so that the U.S.A. might send these things to the Allies. President Wilson later made him a member of the War Council, and as such he took part at



B. Chasch

HFBIRI HOOFVR

Paris in the negotiation of the Versailles Treaty. Also after the armistice, he was entrusted with the formidable task of directing the Amer. Relief Administration whose function it was to supply food and clothing to many of the needy countries of Europe. In 1920 Harding appointed H. to his cabinet making him secretary of commerce. H. held the same post under President Coolidge. The Republicans nominated him for President in 1928, and the Democrats nominated Governor Alfred Smith who was not only a 'wet' in his attitude on the prohibition laws, but also a Roman Catholic. The Protestant dry elements were therefore, bitterly opposed to him. H. was elected by an almost unprecedented majority of the electoral votes receiving 444 to Smith's 87. Immense hopes were reposed in him. But soon the clouds began to gather. In the Senate, Radical Republicans united with the Democrats in attacking his policies. The farmers were disaffected on account of the low prices their products were fetching. The Republican partisans in Congress passed a new tariff Bill which was the highest on record, and against which many economists, Republican papers, and even manufacturers protested. Nevertheless, H. signed the Bill. Then came the Stock Exchange crash of the autumn of 1929, followed by universal depression in

business and nation-wide unemployment. To all these troubles was added acute suffering in the farming states in 1930, caused by drought. In the Congressional elections of 1930 H.'s party suffered enormous reverses. New York state re-elected the Democrat Franklin Roosevelt as governor by the largest majority in the list of the commonwealth. The Republican majorities in both houses of Congress were wiped out. The seventy-first Congress ended its existence in bitter fighting with the President. It passed over H.'s veto, a law giving early payment of bonuses to soldiers of the first World War. It wrangled with him over measures for relief for the farmers and the unemployed. The popularity of the President which in the autumn of 1929 was at its zenith now seemed at the opposite end of the scale. But in June 1931, by one statesmanlike stroke he temporarily recouped his fortunes. He proposed that all war debt and reparation payments be suspended for one year dating from July 1, 1931. But in 1932 he was heavily defeated in the presidential election by Franklin D. Roosevelt and his term of office ended in 1933. In 1946 he was appointed chairman of the U.S. Gov.'s Lamine Emergency Committee. Publications: *The Challenge to Liberty* (1934), *American Road* (1938), *America's First Crusade* (1942), and *The Basis of Lasting Peace* (1941). See monograph by W. Irwin, 1921 and J. Hamill *The Strange Career of Mr. Hoover under two Phases* 1931.

Hope, Queen's Hope, or Estyn, par. and vii on R. Alyn, Flintshire, Wales, 7 m. N.W. of Wrexham. Pop. 3000.

Hope, Anthony, see HAWKINS, SIR ANTHONY HOPE.

Hope Thomas (c. 1770-1831) English novelist and antiquarian b. in London. A great lover of architecture, paintings, and statues, he formed a fine collection of works of art, and in 1807 pub. a work on *Household Furniture* which produced a marked improvement in public taste. He also wrote *Costume of the Ancients* (1800), *Modern Costumes* (1812), *Anastasis* (London 1819), and an *Historical Essay on the Literature* (1831).

Hope Diamond, beautiful 44-carat stone of a fine sapphire colour which for long was supposed to bring misfortune to its owners. Its history began about 400 years ago when it was reputed to have been stolen from a Burmese temple, where it had formed the eye of an idol. It was sold to Louis XIV. and Louis XVI is said to have given the diamond to Queen Marie Antoinette. Later the diamond turned up in Amsterdam, where it was bought by a member of the Hope family to which the duke of Newcastle belonged, and so became known as the Hope Diamond. It was afterwards sold to a New York jeweller and after passing through the hands of several people was bought in Paris in 1911 by Edward Beale McLean for £60,000. Shortly after the purchase his son was killed, and when Mrs. McLean died in 1947, the Russian Gov. opened negotiations for the purchase of the diamond.

Hopei, formerly Chih, Chih, or Fehih,

prov. of China, in the extreme N.E. bordering on Mongolia on the N., Manchuria and the gulf of Pechili on the E. Area about 60,000 sq. m. The greater part of the prov. is a fertile alluvial plain, watered by the rvs. Potho Hunho Lwanho, Hutoho, and Shangho, and traversed by the Imperial Canal. Millet, maize, wheat, cotton, sugar, indigo, tobacco, and fruit are grown. It has many tanning factories. The climate is moderate, but much damage is occasionally caused by floods in the plains and by violent dust storms. There was a severe famine in the prov. in 1842, and it suffered considerably during the Taiping revolt. Paotingfu is the seat of administration. Tientsin and Chinwangtao are treaty ports. There is fair railway communication. In 1914 the part of the prov. beyond the Great Wall was transferred to Inner Mongolia, and Peking and the country round formed into a separate dist. Pop. (including many Muslims) 28,529,000; area, 34,140 sq. m. The gulf of Pechili is an extension of the Yellow Sea, lying between Korea and the prov. of Shantung, and receiving the waters of the Pitho.

**Hope Islands**, cluster in Van Diemen's Gulf, N. Territory, Australia.

**Hopeoun**, Earl of, see LINLITHGOW, MARQUIS OF.

**Hopeoun**, John Hope, fourth Earl of (1765-1823), Brit. general, b. in Linlithgowshire, served with distinction in the W. Indies, Holland, Egypt, and Spain. Also saw service in the Walcheren expedition, and in the Peninsular campaign, where he was wounded and taken prisoner.

**Hopeoun**, div. of Cape Prov., S. Africa. The tn. of this name near the Orange R. is 70 m. S.S.W. of Kimberley. There are diamond fields and ostrich farms in the vicinity. The discovery of the Kimberley diamond mines is traced to the incident of Erasmus Stephanus Jacobs picking up the first diamond in the region on his father's farm, De Kalk, near Hopeoun, in 1866. Pop. (div.) 8000, (tn.) 2215.

**Hopkins**, riv. of W. Victoria, Australia. It rises in the Pyrenees Mts and flows in a generally southern direction to the Indian Ocean at Warrnambool. Only about 5 m. are navigable. Length, 110 m.

**Hopkins**, Essek (1718-1802), Amer. naval officer, b. in Setautte R.I.; appointed by Congress, 1775. First Commander-in-Chief of Amer. navy with title of admiral. He was dismissed for allowing the *Mangou* to escape.

**Hopkins**, Sir Frederiek Gowland (1861-1947), became prof. of biochemistry (1914) in the univ. of Cambridge, and Sir Wm. Dunn prof (1921). For his brilliant work in biochemistry he has received sev. awards, including part of the Nobel prize for medicine in 1929. In 1892, H. devised a reliable and comparatively simple method, still in general use, for the estimation of uric acid in urine. H. had not been long at Emmanuel College, Cambridge (which made him a supervisor of its medical students), when he made in 1901 the first of his great discoveries: in collaboration with S. W. Cole he isolated and identified the amino-acid tryptophane.

In 1902 a univ. readership in Chem. Physiology was created for him; and he only gave up his posts at Emmanuel College in 1910 when Trinity College elected him to a readership in Physiological Chem. with a fellowship. In 1914 a professorship of Biochemistry was created for him, to terminate with his tenure of office: in 1921 he became the first Sir Wm. Dunn Prof. of Biochemistry. The results obtained by H., working first with Fletcher (1905-06) and later with Dixon (1921), revolutionised the conception of the source of muscular energy and oxidation of tissues. The earlier work, showing the formation of lactic acid during muscular contraction in the absence of oxygen, and the presence of mere traces of this product in the resting muscle and during contraction in the presence of oxygen, led to the abandonment of the theory of storage of intramolecular oxygen. Later, H. and Dixon isolated glutathione, a constituent of plant and animal tissues, and showed that other cell products reduced this substance immediately it was oxidised. Glutathione was therefore regarded as the centre of autoxidation in the cell. H. was the first to show that life could not be maintained on protein, fat, and carbohydrate alone, but that 'accessory' food factors were essential. He thus initiated the research on vitamins and helped to show their importance in bone formation. (See VITAMINS.) In addition to these important contributions to physiology and dietetics, H. discovered and investigated the biological rôle of many other compounds including pterins, a chemical group identified with the pigments of butterfly wings, of importance in biochemistry. He received the Royal Medal of the Royal Society in 1918 and the Society's Copley Medal in 1926. In 1931 he was elected President of the Royal Society. In 1933 he was President of the Brit. Association. Awarded the Baly Medal of the Royal College of Physicians in 1915 and in 1921 was Vice President of the Chem. Society. In 1928 he was given the Society of Apothecaries Medal and in 1931 was awarded the Albert Medal of the Society of Arts. O.M. 1935.

**Hopkins**, Gerard Manley, (1844-1889), Eng. poet and one of the most original of the poets of the second half of the nineteenth century. Went to Balliol College, Oxford, his tutor being Walter Pater, and entered into the Rom. Catholic Church, but, on the advice of Cardinal Newman, he finished his studies at Oxford. In 1866 he joined the Society of Jesus and eleven years later was ordained priest. Before entering on his religious vocation H. decided to eschew poetry, but after seven years, at a hint from a superior, he resumed his muse by writing a commemorative poem on the Franciscan nuns lost in the wreck of the *Deutschland*—the poem being rejected by the *Month* (1876). If the poem was considered 'advanced' forty years later, it is small wonder that it was rejected. His poet friends, Bridges and Patmore, felt some estrangement from his style: but despite the doubts of his friends, he clung to his alliterative metres

and his artificial compounds—the 'lovely-asunder starlight,' and the 'silk-sack clouds.' The background to most of his poems was his missionary life spent in seartries and tins in England. Yet he was more concerned with being a preacher than a poet, and his letters show how much his poetry was an overcoming of fatigue. His last poems belong to the few remaining years of his short life, when he taught Gk. and Lat. in Dublin after his election as a Fellow of the Royal Univ. in 1884. But his health was then declining and his imperfect sympathy with Irish politics added to his unhappiness. He was nearly thirty years dead before his poetry was pub. In 1918 the single vol. that contains it was brought out by his Oxford friend, Robert Bridges. But the first ed. of under one thousand copies took twelve years to sell and whether he will ever be widely read is much to be questioned, though fame has not failed him and he is a poet who should eventually receive his due place in the hierarchy of England's major poets. The poetry of H. in metrical form and imagery, shows the influence of Keats. This is evident in the beautiful poem *A Vision of the Mermaids* (1862). More mature, but not more inspired than this remarkable effort of his youth, are *Ad Mariam*. In the style of Swinburne *Winter with the Gulf Stream*, *Line for a Picture of St. Dorothea*, *Margaret Clitheroe*, *Wind Loosens Heaven-Heaven*, *Pied Beauty*, *I have desired to go, Felix Randal* and the *Habit of Perfection*—the last six being among his best poems. His name figures in every study of contemporary verse as that of a major poet, but nonetheless a poet's poet. An excellent analysis of his poetry is to be found in the chapter 'The Craftsman' in G. F. Lahey, *Gerard Manley Hopkins*, 1930. See also R. Bridges (ed.), *Poems of Gerard Manley Hopkins* (with introduction by C. Williams), 1930. Eleanor Ruggles, *Gerard Manley Hopkins*, 1947, and W. A. M. Peters, *Gerard Manley Hopkins: a critical essay towards the Understanding of his Poetry* 1948.

Hopkins, Harry Lloyd (1890-1946) Amer. social reformer politician and administrator, b. at Sioux City, Iowa, U.S.A., of comparatively humble parentage. Educated at Grinnell College, Iowa. While still at college he decided on a social service career and, in 1914, was put at the head of the New York City Board of Child Welfare. Defective eyesight precluded military service in the 1914-18 war and he joined the Red Cross, leaving it in 1922 to become assistant director of the New York Tuberculosis and Health Association, in which capacity he attracted the notice of Franklin Roosevelt then Governor of New York State. Roosevelt made him acting director of the New York State Temporary Emergency Relief Administration and, after his election as President, Federal Relief Administrator, in which capacity H. spent \$9 m. in relieving unemployment, especially by building public works on a nation-wide scale. It was during these years at Washington that H., who was in close touch with the White House, became the close friend of

Roosevelt. In 1938 the President appointed him Secretary of Commerce and when in 1940, ill health compelled his retirement from the post, H. had won a wide measure of confidence among business men. By the time of the Democratic Convention of 1940 H. had sufficiently recovered to work at the White House, becoming a resident there and a member of the Roosevelt household. Later, as virtual secretary to the Inner War Cabinet, H. became personal assistant to the President and his closest confidant. In Jan. 1941, Roosevelt sent him to London as his personal emissary and later to Stalin in Moscow. In the same year the President made him head of Lend Lease Administration. When the U.S.A. entered the war, H. was appointed an adviser on strategy and war supplies and, soon afterwards, chairman of the Munitions Assignment Board. Member of the Pacific War Council, 1942. After Roosevelt's death, H. again went to Moscow as President Truman's envoy and was instrumental in the partial solution of the difficulty on the veto which had arisen at the San Francisco Conference (q.v.). The strain of the Moscow journey, however, on his health prevented him from attending the meeting of the representatives of the three major allies in Berlin in July, 1945, and from Nov. he was a patient in the New York Memorial Hospital, dying on Jan. 29, 1946. His was truly a remarkable career. From an earnest and single-minded social reformer he became one of the leading administrators of the New Deal (q.v.) and a trusted emissary on diplomatic missions of the highest importance. Despite ill health he accepted in the early stages of the war, the most onerous responsibilities, instilling a confidence in the goodwill and power of his country which was a source of immense inspiration to its allies. In Sept. 1945 he received the Amer. Distinguished Service Medal, the citation speaking of the exceptional ability he had shown in 'welding our allies to the common purpose of victory over aggression.' See R. Sherwood (ed.), *The White House Papers of Harry L. Hopkins* (vol. 1), 1948.

Hopkins, John (d. 1570), Eng. hymn writer, was part translator with Thomas Sternhold of the famous metrical version of the Psalms. Of the completed ed. which appeared in 1562 sixty psalms bore the name of H., and forty that of Sternhold. H. also contributed some commendatory verses to Foxe's *Acts and Monuments*, and is often credited with the authorship of the 'Old Hundredth.' He was rector of Great Walsingham, Suffolk (1561-70).

Hopkins, Johns (1795-1873), Amer. philanthropist, b. in Anne Arundel co., Maryland. His Quaker parents educated him for a farmer, but at the age of seventeen he went to Baltimore and became a grocer, eventually founding the house of Hopkins & Brothers, and amassing a large fortune. This he devoted to various philanthropic purposes, he presented Baltimore with a public park, founded the Johns Hopkins Univ., and gave money towards a free hospital.

**Hopkins, Mark** (1802-87), Amer. educationist, b. at Stockbridge, Massachusetts. He was appointed prof. of moral philosophy at William College in 1830, becoming president of the college in 1836. His publs. include: *Lectures on the Evidences of Christianity* (1846), *Lectures on Moral Science* (1862), *Outline Study of Man* (1873), *Teachings and Counsels* (1884). See life by F. Carter, 1892; and the anonymous ed. of *Early Letters of Mark Hopkins*, 1930.

**Hopkins, Samuel** (1721-1803), Amer. theologian, b. at Waterbury, Connecticut. He studied under Jonathan Edwards, and in 1743 was ordained at Housatonic, now Great Barrington, Mass., where he continued until 1769 when he became minister of Newport, Rhode I. He was an opponent of slavery, and in 1776 pub. *Dialogue showing it to be the Duty and Interest of the American States to emancipate all their African Slaves*. His *System of Doctrines contained in Divine Revelation, Explained and Defended* (1793), sets forth his theological opinions, which differ from orthodox Calvinism in their opposition to the doctrines of original sin and of the Atonement. The pub. of his views was the cause of the famous 'Hopkinsian controversy.' H. is the central figure in Mrs. Stowe's novel, *The Minister's Wooing*, (1859). See life by S. West, W. Walker, *Ten New England Leaders*, 1901; and B. Dexter, *Biographical Sketches of Yale College*, 1907.

**Hopkins, William** (1793-1866), mathematician and geologist, b. at Kingston in Derbyshire. He entered Peterhouse, Cambridge, in 1822, and became seventh wrangler in 1827. He settled at Cambridge as a tutor, and was so successful in his work that he was called 'the senior wrangler maker'; indeed, in 1849 he had nearly 200 wranglers among his pupils, amongst whom may be mentioned such distinguished men as Todhunter, Tait, Fawcett, Stokes, and Clerk-Maxwell. About 1833 he began to study geology, and in 1830 received the Wollaston medal for his researches in the application of mathematics to physics and geology. In 1851 he was elected President of the Geological Society, and in 1853 became President of the Brit. Association. His publs. include *Elements of Trigonometry* (1833), and *Theoretical Investigations on Motion of Fluxes* (1842).

**Hopkinson, François** (1737-91), Amer. author, b. in Philadelphia, U.S.A. He was educated at the univ. of Philadelphia, and then studied law. In 1775 he was elected representative of New Jersey in the Amer. Congress, and was a signer of the Declaration of Independence. He was appointed Judge of the Admiralty in Pennsylvania (1779), and Judge of the Dist. Court of the United States. H. was a versatile writer and was very popular during the revolution, when he wrote his famous ballad *Battle of the Clouds*. His writings include: *The Treaty* (1761), *An Evening Hymn*, *Science* (1762), *A Camp Ballad*, *The Typographical Male of Condemning a Quaker*, *The Pretty Story* (1774), *The Prophecy* (1776), *The Political*

*Catechism* (1777), *Essay on Whiteness and Modern Learning* (1784). See G. E. Hastings, *Life and Works of Francis Hopkinson*, 1926.

**Hopkinson, John** (1810-98), Eng. electrician, b. at Manchester and educated at Trinity College, Cambridge, where he graduated as senior wrangler. He then took up electrical engineering, and made many important investigations; in 1890 being awarded a royal medal for researches in electricity and magnetism. He was prof. of electrical engineering at King's College, London, at the time of his death. He pub.: *Dynamic Electricity* and *Original Papers on Dynamic Machinery and Allied Subjects* (1893), and other papers on similar themes. He was killed with a son and two daughters ascending the Dent de Veisvi in the Alps.

**Hopkinson, Joseph** (1770-1842), son of Francis H., b. at Philadelphia and educated at the univ. there. He studied law and practised at Easton and Philadelphia. H. was a member of the national House of Representatives from 1815-19, and judge of the Dist. Court of the U.S.A. in 1828; he was also vice-president of the Amer. Philosophical Society and president of the Philadelphia Academy of Fine Arts. He pub. some of his addresses which he delivered before various societies, but he will be chiefly remembered for his song, *Hail, Columbia* (1794). See life by Francis Wharton, R. Griswold, *Poets and Poetry of America*, 1832; and B. A. Konkle, *Joseph Hopkinson*, 1931.

**Hopkinsville**, city of Kentucky, U.S.A., 60 cent of Christ in co., 71 m. S. of Henderson. It is important principally for its tobacco; it trades also in agric. produce, live stock, coal, and timber. There are also flour mills. The Bethel Women's College is situated here. Pop. 11,700.

**Hoppner, John** (1758-1810), portrait painter, b. in Whitechapel, London. He was admitted as a student to the Royal Academy in 1775, and in 1782 gained the gold medal for an original painting of a scene from King Lear. In 1783 he exhibited portraits of the youngest three princesses, Sophia, Amelia, and Mary, and in 1789 was appointed portrait painter to the Prince of Wales. In 1795 he was elected R.A. H. acquired some reputation in his own day, especially for his portraits of women and children. His figures were graceful and natural, and his colouring brilliant and mellow. Some of his best pictures are the group of 'Lady Catherine Smith and Children' (belonging to the duke of Wellington), the fine portrait of 'Mrs. La Belle' (the property of Lord Harewood), both of which were exhibited at the Royal Academy, 'The Countess of Oxford' (National Gallery, London), 'William Pitt' and 'Lord Grenville' (National Portrait Gallery). See W. Mackay and W. Roberts, *Life and Paintings of J. Hoppner*, 1909.

**Hops** (*Humulus lupulus*), perennial herbaceous plant belonging to the order Cannabinales, which has long twining stems which climb freely over hedges and bushes. Its leaves are stalked and three to five lobed and very rough to the touch, the

plant being of luxuriant growth and abundant foliage. The male flowers consist of a small five parted perianth enclosing five stamens, and grow in loose allary panicles. The female flowers are in strobilos, or cones, and it is these ripened cones which are sold under the name of H. so that female plants are most generally planted a few male only being necessary to fertilize the female flowers. The H. is first mentioned by Pliny as being a garden plant of the Romans who were in the habit of eating the young shoots as we eat asparagus (indeed in Belgium the young tender tops are even now cut off in spring and used as food the plant being forced from Dec to Feb for that purpose), and as early as the eighth and ninth centuries H. gardens (*humularia*) were cultivated in France and Germany for the making of beer, but up to the sixteenth century the plant seems only to have been grown in a dital manner. It was introduced into England from Flanders in 1225 but did not become sufficient for the supply of the kingdom till the end of the seventeenth century. The chief coas concerned with H. production in England are Kent, Hereford, Sussex, Worcester, Hants, and Surrey, and of these Kent has always taken the lead, and includes about two thirds of the H. acreage of the Brit Isles indeed out of 41' pers in the country 31 have H. plantations. These are prepared in Oct and Nov the earth is ploughed dug and manured (for a rich soil is required) and the plants put in in rows 6 ft apart. Later they are pold and dressed, the former being done in various ways and at various times. Some owners pold their plants the first year to produce H. in the first season, but as a rule planters nurse their young plants for twelve months as they make very little growth the first year. When the cones are ripe i.e. have become amber coloured and firm, they are picked and conveyed to the oast house to be dried, great care is required to prevent over heating, by which the essential oil would be volatized. The cultivation of H. is very precarious as the plant suffers from various pests, both insect and fungoid parasites of the former the red spider, *Tetranychus telarius*, is most destructive in very hot summers, and of the latter the fungus, *Podospheara costagani* does much mischief to the cones. See D. Skillock, *Hops*, 1931. See also BRIT WOOD.

Hoquiam, tn., Washington, U.S.A., a seat of Chhalls co., 13 m W. of Montesano. It is surrounded by timber lands. It has large lumber and shingle mills, also plywood and veneer plants. It ships lumber, fish, and furs. Farming and dairying are also carried on. There are shipyards and a fine harbor. Pop. 10,800.

Horace, Quintus Horatius Flaccus (83-8 B.C.), Rom poet, b. at Venusia in Apulia. He was of servile descent but his father had acquired the status of freedman, and from his profits as an auctioneer's collector had been able to purchase a small farm at Venusia. One of the most endearing traits in the character of H. is his reverence for his father. H.'s father recognised the genius of his son and, comparatively

poor though he was, he contrived to give him the best education obtainable by a Rom youth. He therefore declined to send the boy to a prov. school, and had him educated in Rome at the school of Orbilius, where the sons of knights and senators were trained. The father himself acted as attendant on the boy accompanying him to school. In H.'s time many Rom. youths received their univ. training at Athens, and thither H. repaired about the age of twenty. When Brutus went to Athens to levy forces against Octavian, H. enlisted in his service and was given the rank of military tribune in command of a legion. He was on the field at Philippi, and his depreciation of his own valour must be regarded as an imitation of Archilochus and Alcaeus, and not as serious information (*Odes*, II. vii. 9; *Epistles* II. n. 46-50). In the land settlements after the war, H. a paternal property at Venusia was confiscated and he became a scribe in the quaestor's office at Rome. Varius and Virgil introduced the young poet to Maecenas, who became his life long patron and friend. Maecenas, in turn introduced him to Augustus, who soon to the glory of Rome and the fama of his protégé, enlisted his services to voice the ideals of his new empire. From this time H. became a court poet, but his genius was strengthened rather than cramped by the guiding influence of his patrons. In the year 31 B.C. Maecenas presented to the poet the Sabine farm, which throughout the remainder of his life satisfied his deep seated love of country life and scenery. Though towards the closing years of his life, H. was drawn into the most bosom of the court he never forgot his former patron. To his fervent love of Maecenas the seventeenth ode of the second book and the thirteenth ode of the fourth book bear speaking testimony. Maecenas himself, on his deathbed, thus commended the poet to the emperor, *Ut tibi illud ut mihi esto nomen* (*Suet.*, *Jul.*), but H. only survived his patron a few weeks. H. died suddenly and without making a will, and to Augustus he left the entire control of his affairs. H.'s earliest pub. was the first book of the *Satires* (c. 30 B.C.), followed by a second book c. 30 B.C. These follow the didactic aims and semi-dramatic setting of the early *Satires* of Lucilius, but they are less personal in attack than the work of the early master. Unlike the fierce invectives of Juvenal, the satiric vein in H. is for the most part kindly in tone. The *Epodes* appear to have been written between 41 and 31 B.C. They are based on the works of Archilochus but are sometimes coarse in sentiment and immature in expression. The *Epistles* are also didactic in theme, but the sentiment is mellow, and the workmanship perfect. In subject and style the *Epistles* are a metrical treatise on the art of poetry, is closely allied to the second book of the *Epistles*. This work is somewhat desultory in treatment and capricious in judgment, its standpoint is uncompromisingly mechanical, yet it throws valuable light on H.'s own poetic methods, and the state of literary criticism at Rome.

But H.'s great work was the *Odes*. These do not stand high on account of any startling originality of thought or depth of feeling, but in finish and technique they are perfect. The finest odes are, perhaps, those which deal with Rome's expansion and conquests; the love lyrics, although charming and graceful, are sometimes insincere and insipid, and are much inferior to the flaming lyrics of Catullus. The philosophy of H. is eclectic, but, if he inclines to any sect, he is Epicurean and *carpe diem* is his guiding precept. As a Rom. poet he is generally held to rank second only to Virgil.

EDITIONS: E. C. Wickham, 1903-04; *Odes and Epodes*, T. E. Page, 1895; J. Gow, 1906; *Satires*, A. Palmer, 1896 and J. Gow, 1901-09; *Epistles*, A. S. Wilkins, 1892. TRANSLATIONS: J. Conington, 1863-70; W. S. Morris, 1912; H. Macnaghten, 1926; H. E. Butler, 1929; and A. S. Way, 1936; and E. Marsh, 1941. BRUNES: W. Y. Sellar, *Horace and the Elegiac Poets*, 1899; J. F. D'Alton, *Horace and his Age*, 1917; A. Y. Campbell, *Horace, a new Interpretation*, 1924; T. R. Glover, *Horace*, 1932; T. Zieliński, *Horace et la société romaine*, 1938; L. P. Wilkinson, *Horace and his Lyric Poetry*, 1945; A. Noyes, *Portrait of Horace*, 1947; also Concordance by L. Couper, 1916.

**Horæ** (Lat. *hora*, hour), Gk. mythology, the personification of the seasons. They are weather-goddesses; the children of Zeus and Themis, whose function, it is to regulate the order of nature, superintend agriculture, etc. They are companions of the nymphs and graces, and are represented as goddesses of youthful bloom and grace, typical of the springtime. They are sometimes indicated as being three in number, with parents as above mentioned; but under Alexandrian influence they became the four daughters of Helios and Selene. See J. H. Krause, *Die Museen, Grazien, Horen und Nymphen*, 1871.

**Horapollo**, or **Horus Apollo**, Gk. grammarian who taught at Alexandria and Constantinople in the reign of Theodosius. He is often confounded with the Egyptian Horapollo, who lived in the time of Zeno. There is still extant a work by him on hieroglyphics.

**Horatii**, three Rom. brothers, chosen by the king, Titus Hostilius, to fight against the Curiatii (three Alban brothers) in order to decide the contest between Alba Longa and Rome. Two of the Romans quickly fell in the combat, but the surviving Horatius was victorious and was led back in triumph to Rome.

**Horatius Cocles**, Publius, descendant of the survivor of the three Horatii, who, according to tradition, along with Titus Bernininus and Spurius Lartius, held the bridge over the Tiber against Lars Porsena, king of Latium, in 507 B.C. H. sent back his two companions when the fight was almost finished and defended the bridge single-handed. He then escaped by swimming the Tiber, though enfeebled by wounds, and was overwhelmed with honours by his compatriots. See T. Macaulay, *Lays of Ancient Rome*, 'Horatius', 1842.

**Hordaland**, co. of Norway, on the Atlantic coast, with Buskerud and Telemark cos. to the E. Chief town, Bergen. Area 6,643 sq. m. Pop. 186,900.

**Hörde**, tn. of Westphalia, Germany, in gov. of Arnsberg, 3 m. S.E. of Dortmund, in which it is now incorporated. Pop. 36,000.

**Hordeolum**, see STYE.

**Horde of Ashford**, Sir Thomas Jeeves Horder, first Baron (b. 1871), Eng. physician, son of Alfred H., of Wiltshire. Trained for the medical profession at St. Bartholomew's Hospital, of which he became assistant-physician. Physician-in-ordinary to King George VI. Consulting physician to the Royal Orthopaedic Hospital; to the Royal N. Hospital; and Honorary Consulting Physician to the Ministry of Pensions. Ex-President, Harleian Society of London; and of the Medical Society of London. Member Executive and Chairman, Advisory Scientific Committee, Brit. Empire Cancer Campaign. President of Fellowship of Medicine. Has written on *Ulcer Pathology in Practice* (1907), *Cerebro-Spinal Fever* (1915), and with A. E. Gow *Essentials of Medical Diagnosis* (1928); *Health and a Day* (1937), *Health and Social Welfare* (1945); *The Philosophy of Jesus* (with H. Roberts, 1945). He was created a baron in 1933.

**Horeb** (Arabic, *Jebel Musa*, Mt. of Moses), mt. in the N. part of Arabia, traditionally known as the sacred mt. of the Heb. law-giving, on the same ridge as Mt. Sinai. The monastery of St. Catherine lies at its foot, in a ravine, and near by is the chapel of St. Elias (Ilijah). The rock on H. from which water is said to have issued at Moses' blow is pointed out by the monks to sight-seers.

**Horshound** (O.E. *harhune*, Ger. *Andorra*, Fr. *marriabe*), species of perennial herbs, belonging to the family Labiate, growing about 1 ft. high, with thick stems and a short rootstock. Most of the species are herbaceous plants occurring in Europe, N. Africa, and W. Asia. Common or white H. (*Marrubium vulgare*) is found throughout Europe, and occurs in Britain on sandy or chalky ground, but is not at all common. Black H. (*Ballota nigra*) a perennial herb, is also a native of Britain, S. of the Forth and Clyde, and occurs also in Europe and N. Africa. H. has likewise been naturalised in parts of America; it is used widely as a cough medicine.

**Horgen**, tn. of Switzerland on Lake Zürich in canton of and 10 m. E.S.E. of Zurich; amidst vineyards, orchards, and fine walks. Manufs. cotton, silk, and chems. Pop. 8900.

**Horizon** (from Gk. *ὁρίζων*, dividing or bounding), circular line round which the earth and sky seem to meet, most clearly defined at sea, where it is called the sea H. This is known in astronomy as the *sensible* H., while the name *rational* H. is given to the circle whose plane passes through the centre of the earth. The sea H. is depressed by a dip which varies according to the height of the observer's eye from the water, this being due to the roundness of

the earth. See treatises on Spherical Astronomy.

**Horley**, par. and residential vil. in Surrey, England, 5 m. S.S. E. of Reigate, and situated on the R. Mole. It possesses an Early Eng. church (St. Bartholomew). Pop. 6000.

**Hormayr, Joseph, Baron von** (1782-1848), Ger. historian, b. at Innsbruck. In 1815 he was appointed historiographer of Austria, and in 1828 became councillor for the foreign dept. of Bavaria, holding the position of Bavarian minister to Hanover in 1832. He wrote widely, among his works being *History of Tyrol* (1817), *General History of Modern Times* (1817), *Vienna, Its History and Curiosities* (1823), etc. See life by T. von Helgel, 1881.

**Hormones** (Gk. *hormao*, I excite) term applied by E. Starling to those juices prepared by organs, which pass directly into the blood stream, they are transported to some other parts of the body where they exert a controlling and regulating effect on some vital activity. They are often referred to as the 'chemical messengers' of the body. The most highly complex inter relations appear to exist between the glands, so that the effect of a drug on one of them is very far reaching. W. Baylis and E. Starling prepared an extract, *secretin*, by digesting duodenal mucous membrane with hydrochloric acid. The product is soluble in alcohol, and is not destroyed by boiling. If secretin be injected into the blood, it leads to active stimulation of the pancreas. This it is apparently naturally formed by the action of the acid chyme on some pro secretin in the intestine. It passes to the pancreas, which it stimulates to produce pancreatic juice. Many its besides secretin are now known, most of them produced in ductless glands (endocrine organs). The study of these glands, and of their Hs., forms the important branch of medicine known as endocrinology. We may mention thyroxin, formed in the thyroid gland of the neck; adrenalin, secreted by the adrenal glands near the kidneys, and 'pituirrin,' a mixture of many hormones manufactured by the pituitary gland of the brain. The sex organs (testes or ovaries) are also the site of hormone production, as is demonstrated by the striking consequences of castration. Insulin is the H. of the pancreas. See D. Paton, *Hormone Therapy*, 1922. J. Cunningham, *Hormones and Heredity*, 1922; B. Harrow, and C. Sherwin, *Chemistry of the Hormones*, 1931; G. F. Walker, *The Status of Enzymes and Hormones in Therapy*, 1935.

**Hormones, Plant, see PLANT HORMONES**

**Hormuz**, or Ormuz, anc. city on the Persian Gulf on the N. E. extremity of the Is. of Ormuz. It sprang up in the latter part of the Middle Ages, and became a great emporium of the trade between Persia and India. In 1591 the Portuguese captured it and held it till 1622, during which time it served as a great depot for the products of India and China. In little more than a century, on the rise of Shah Abbas, its trade was transferred to the new tn. of Bender Abbas. The ruins of

the Portuguese fort still remain at the vil of H.

**Horn**. A brass wind instrument with its tube bent in a circular form. In its early stages it could produce only the natural harmonics and was used mainly for hunting fanfares. When composers began to write for it they could use only those notes, usually in the key of F, in which it was pitched as a rule; but after the invention of a series of crooks which could be inserted, the length of the tube could be altered and the instrument played in a variety of keys. Some extra notes, of rather uncertain quality, could also be obtained by inserting the hand into the bell. It was only by the introduction of valves about the 1430s that the full chromatic scale could be played on a single instrument. The compass is c. 3½ octaves from (on the Fr. H.) B flat below the stave in the brass clef. Also an 8-ft. reed organ stop of powerful tone.

**Horn (animals)**, see HORNS.

**Horn, Cape**, generally considered the southernmost point of S. America, at the S. of a small is. to the S. of Tierra del Fuego. Discovered in 1616 by the Dutch navigators, Lemaire and Schouten, and named after the Dutch tn. Hoorn, the bp. of the latter.

**Horn, French**, see FRENCH HORN.

**Horn, Arvid Bernard, Count** (1664-1742), Swedish statesman, b. at Vuoren-taka, Finland. He served in the Swedish army against France and gained rapid promotion, being sent in 1704 as Swedish ambassador to Warsaw, and assisting in the deposition of King Augustus of Poland. In 1705 he became councillor to the new King Stanislaus, and as head of the party of 'Bonnets' practically ruled Sweden, converting it into a limited monarchy. His party remained in power till 1738, when it was ousted by the Habs. Under his leadership the country prospered, and the year when he was marshal came to be spoken of as the time of Arvid Horn. See Gustav Horn, *Arvid Bernhard Horn*.

**Hornbeam**, or *Carpinus betulus*, species of *Putulaceae*, found in N. climates and a



HORNBEAM

native of Britain. It greatly resembles the beech in habit, but its leaves are rough and elm like. The timber is extremely rough, but is not very often used. In April it bears male and female catkins, and the latter precede a number of one-seeded nuts with a three-lobed wing on one side.



HORNBILL

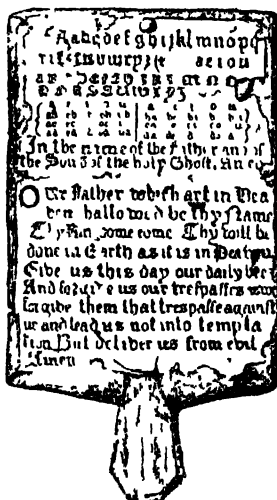
Hornbill, name given to the many species of coraciiform birds belonging to the family Bucerotidae. They are of considerable size, and derive their name from their immense dentated downward-curved beak, with the horn-like casque at the base. The species range from Africa, India, to the Malayan region, and are remarkable for their slow and heavy flight, which, however, is counter-balanced by the pneumatic nature of their bones. The members of *Bucerus* are omnivorous and feed chiefly on the ground, their food consisting of roots, insects, tortoises, etc. During breeding the female is imprisoned by the male in the hollow of a tree which he plasters up, leaving only a small slit for the admission of food. *B. abyssinicus* is the best known species, other genera being *Rhinoplax*, *Aceros*, *Lophoceros*, and *Anorhynchus*.

Hornblende, commonest member of the amphibolic group of rock-forming minerals. It is of all colours, but the name is generally restricted to the black or very dark green varieties. It is similar to augite, from which it can only be distinguished by its cleavage angle ( $q.z.$ ). The monoclinic crystals are prismatic in habit with a six-sided cross-section; the angle between the prism faces, parallel to which there are perfect cleavages, is  $55^{\circ}49'$ . In metamorphic rocks it generally forms irregular masses without definite crystalline form. The dichroism is always marked. H. occurs as an essential constituent of many kinds of igneous rocks, and many crystalline schists are almost entirely formed of it.

Hornblende Schist, mineral commonly associated with gneiss and, less frequently, with mica schist. It follows the contortions of gneiss and is traversed like it by granitic veins.

Hornbook, primer, formerly used by children in England to learn the elements of reading, prior to the days of printing. It consisted of a piece of paper or parchment on a tablet of wood, with a slice of transparent horn in front, hence the name. It contained the alphabet, large and small, the Lord's Prayer, and the Roman numerals, and was prefaced with figures of the Cross. There was a handle attached to it. By means of a hole bored for a string, the book could be fastened to the scholar's girdle. At one time Hs. were quite common but they have now become very scarce.

Hornbostel, Erich von (1877-1935), Austrian musicologist, b. at Vienna. Studied physics and philosophy at Vienna and Heidelberg, and in 1906 became head of the gramophone archives in Vienna for the recording of the music of primitive peoples, on which he wrote several learned works. In 1921 he went to Berlin in 1931 to New York and the following year to London and Cambridge.



A SEVENTEENTH-CENTURY HORNBOOK

Horncastle, mkt. tn. of Lincolnshire, England, 130 m. N. of London. The church of St. Mary is, in part, Early Eng., and Queen Elizabeth's Grammar School dates from 1562. The great horse fair, described by George Borrow in *Romany Rye*, is still held annually in the second week of Aug., but has lost much of its importance. The chief industries are



brewing and matting. Pop. 3680. See J. C. Walter, *History of Hornchurch*, 1903.

Hornchurch, vil. and par. in Essex, Eng. land, 2 m. S.E. of Romford. It has manufs. of agric. implements, cycles, tiles and bricks, and there are iron foundries. There is an R.A.F. aerodrome. Pop. 81,400.

Horne, Henry Sinclair, Lord (1861-1929), Brit. general b. in Caithness. Educated at Harrow and Sandhurst. Began his military career in the Royal Artillery in 1880. Served in the S. African war (1899-1902) with distinction. Served throughout the First World War (1914-1918), being mentioned repeatedly in despatches. For his distinguished services at Mons and the first battle of the Marne (1914) he was promoted to the rank of major-general. Later he was appointed to the command of an army corps and after the battles of the Somme he received a knighthood (Oct. 1916). In the house fighting at Vimy Ridge and the battle of Arras (1917) he gained further distinction and was placed in command of the 1st Army. In the Arras area his army took nearly 20,000 prisoners and 200 guns (Aug. 26-Sept. 3). In conjunction with the 3rd and 4th armies his army group won the three great battles of Cambrai at Quentin (Oct. 8-11), at St. Quentin (Oct. 17-20), and at Valenciennes (Nov. 11), 1918. After the War he received a peer's grant and a barony.

Horne, Richard Henry, or Hengist (1804-94) Eng. author b. in London. He became a midshipman in the Navy and served in the war against Spain. His literary career began in 1824, when he contributed a poem *Heads Impaled* to the *Athenaeum*. He was a talented and versatile writer, but is chiefly known by his epic poem *Orion*, which appeared in 1847. He was a correspondent of Miss Barrett (afterwards Mrs. Browning) from 1839 to 1841.

Horne Tooke, John, see TOOKER.

Horned Screamer, popular name of *Palmacera cornuta*, a species of anseriform birds belonging to the family *Palmacidae*. It is found in certain parts of S. America and has glossy black plumage with a white abdomen. Its most remarkable feature is the long slender, yellowish horn which adorns the head.

Horned Toad, popular name given to the species of *Crotaphytus*, a genus of amphibians, belonging to the order Anura and the family *Cystignathidae*. The name is derived from the triangular upright horny appendage above each eye. The head and mouth are huge, and the general appearance is toad-like. *C. cornuta* of N. Brazil is beautifully coloured, as also is *C. ornata*, a species found in Uruguay, Paraguay, and N. Argentina.

Horned Viper, popular name of *Cerastes cornuta*, a species of reptiles belonging to the family *Viperidae*. It is found in N. Africa, and is remarkable for the possession of a large spiky scale above each eye. See CERASTES.

Hornell, city of Steuben co., New York, U.S.A., 70 m. S.E. of Buffalo. It is an agric. centre, and has large car shops of the Erie Railway. Pop. 13,600.

Hornemann, Friedrich Konrad (1772-1801), Ger. explorer in Africa, b. at Hildesheim. In 1796 he was engaged by the African Association in London as an explorer, and in 1797-98 penetrated from Cairo through Fezzan to Murzuk, whence he returned across the Libyan Desert to Tripoli. From Tripoli he forwarded his journals to London, where they were pub. as *Travels from Cairo to Mourzuk* (1802). From Tripoli he returned to Murzuk with the intention of penetrating to the Hausa country, but nothing further is known of him.

Hornet, or *Vespa crabro*, hymenopterous insect belonging to the sub-order *Pterobates* and the family *Vespidae*. It is the largest of all Brit. wasps, measuring about 1 in. in length and is not found N. of the Midlands. The predominant colour is red, with some yellow on head, abdomen and wings. The colonies include not more than 200 individuals, and nest in hollow trees or other sheltered places. The H. is common all over Europe.

Horn-fly, see under DIPTERA.

Horniman, Anne Elizabeth Fredericks (1864-1977), Eng. theatrical producer b. at Forest Hill, London, and educated privately and at the Slade School. Was a pioneer in modern dramatic production. Her first essay in the dramatic world being in 1881 at the Avenue Theatre, London. That he will be chiefly remembered for her work in founding the Abbey Theatre, Dublin, and in the reorganisation of the Gaiety Theatre, Manchester (opened under her management in 1908). She was the parent of the repertory movement in the theatre. The parallel movement in the United States is the Little Theatre movement, and it may be gathered from such Amer. books as Sheldon Cheney's *The New Movement in the Theatre* that the two chief and antagonistic influences on that movement have been the work of Gordon Craig and the visit of Miss H.'s Company in plays by Shaw, Galsworthy, Bennett, and Massingale. See P. P. Howe, *The Repertory Theatre*, 1910.

Horniman Museum, situated in London Road, Forest Hill, S.E., and is under the control of the London City Council. It is open free to the public every week-day and also on Sundays in the afternoon and evening. It deals principally with botany, zoology, and ethnology, and has a library which is also open to the public.

Horning, Letters of, term used in Scots law to signify a writ issued to compel a debtor to pay under the penalty of being considered a rebel. Originally, these writs were very common and the only means of securing the desired end, but they have now practically fallen into disuse. Their name was derived from the practice of making three blasts with a horn to declare the man a rebel if he neglected to pay.

Hornpipe, musical instrument originally used in parts of England, made from an animal's horn. The name is now applied to a lively kind of dance which was used to accompany the music and which was, as a general rule, written in common time, though this was occasionally departed



HORNPIPE OR  
PIBCORA

The upper horn is raised to reverse the reed — From a modern reproduction

from. The best known dances of the kind at the present day is the college H. and the sailor's H.

Horns, weapons that occur on the heads of various animals. They differ in substance; the H. of the deer are made of bone and are processes of the frontal bone, while those of the giraffe are bony prominences covered with hair and are entirely separate from the bones of the skull at first, but afterwards join on to them. Those of sheep, oxen, and antelopes are developed from the frontal bones of the skull, and are covered by a corium and by a horny sheath; but the prong-horned antelope has H. which consist at their basis of bony processes covered by hairy skin, and are covered by horny sheaths elsewhere. The H. of the rhinoceros alone are made of horn, and this occurs in fibres, growing from the skin like a mass of coarse bristles. H. are weapons of defence, and occur in both male and female animals, except in the case of antelopes, when they are generally confined to the male sex.

Hornsea, seaside tn. of the E. Hiding of Yorkshire, England, about 15 m. N.E. of Hull. It is now popular on account of its bathing facilities. Pop. 4900.

Hornsey, municipal bor. and suburb of N. London, situated in the co. of Middle-

sex, 5 m. N.W. of St. Paul's. Pop. (1939), 72,400.

Horn-silver, see CERARGYRITE.

Hornstone, variety of stone which resembles flint very closely. It is exceedingly brittle and splintery, and is sometimes identified with chert, these two being practically undistinguishable from flint.

Hornu, tn. in Belgium, in Hainaut, 6 m. W. of Mons, engaged in coal mining and manuf. of shoddy, machinery, ropes. It has copper-foundries and breweries. Pop. 10,800.

Hornung, Ernest William (1866-1921) Eng. novelist, b. at Middlesbrough; youngest son of John Peter H. Married a sister of Conan Doyle. Educated: Uppingham. In Australia, 1881-86; his early work deals chiefly with that country. Wrote on many themes, but he owed his popularity to *The Amateur Cracksmen* (viz. the elderly-gentleman-cricket-burglar, Raffles, 1899), with its sequels; and *Singapore* (name of a moon-occluded Dundreary-whiskered bushranger, 1905). Though he dealt in 'sensational', H.'s style was refined.

Horology, science which deals with the construction of contrivances for telling the time. It is well to point out in the first place that exact measurement of either space or time is impossible, as no distance can be shown as a multiple or sub-multiple of any particular unit, nor can any period of time be said to contain another period or definite number of times. The problem of measuring time, therefore, resolves itself into an attempt to attain a near approximation to the definition of a unit and the nearest possible measure of a given period in terms of that unit. The particular phenomena which have been recognised as dividing time into regular periods are those associated with the revolution of the earth about the sun, and its rotation about its own axis. The recurrence of seasons due to the earth's revolution has given us the conception of the year, and the problem of calendar-making has involved the measurement of the year in terms of the period of the diurnal rotation of the earth. Machines for telling the time are, however, concerned only with latter unit. The rotation of the earth about its axis is uniform, and occupies the same period every day. The period of rotation is measured by observing the successive returns of a 'fixed' star to the meridian. Such a period constitutes the sidereal day, and is used only by astronomers. The sidereal day is divided by universal consent into twenty-four hrs., and the day is said to begin at noon. For most practical purposes, however, the time between two successive passages of the sun over the meridian is taken as the unit, and the day is divided into twenty-four hrs., commencing at midnight. The solar day is not a uniform quantity, owing to variations in the velocity of the sun, and to the inclination of the equator to the plane of the ecliptic. It is, therefore, necessary to imagine the sun moving at an average rate every day, thus giving us the measure of a 'mean' solar day. It is possible, therefore, to assign three different times to any given instant: sidereal time, mean solar time, and true, or apparent, solar time. The sidereal day is shorter than the mean solar day by about four min. on the average, or, to be more exact, twenty-four hrs. of mean solar time = 24 hrs. 3 min. 56.5551 sec. of sidereal time. The div. of the day into twenty-four hrs. is a relic of the sexagesimal system of notation, as also are the div. of the hour into sixty min. and that of the minute into sixty sec.

Early methods of time measurement.—The div. of the day into recognised periods is a natural consequence of any attempt at the proper conduct of affairs. The Egyptians used a horoscopus consisting of a tapering palm-branch with a slight slit in the broader end, and provided with a handle from which hung a plummet. With this apparatus the transit of a star over the meridian could be observed, and the hour fixed. Later on, we find the use of the clepsydra (q.v.), or water clock, and the sand clock fairly universal in Greece and Rome and Hellenised and Romanised countries. The waterclock consisted of a

vessel of known capacity, whose base was perforated in such a way that the water leaked away slowly, and at a fairly uniform rate. Some instruments were provided with floats pointing to the hrs. inscribed on a vertical scale. The water clock and the sand clock (which was constructed on the same principle) were used to assign a limit to the duration of speeches in courts of justice, a use which has persisted in the form of the hour-glass estab. in certain churches to this day.

*Sun-dials.*—The most exact instrument known to the ancients was the sun-dial. Mention is made of a sun-dial in Isaiah xxxviii. 8, which would refer to about 700 B.C. The hemisphere of the Chaldean Berosus (c. 300 B.C.) was half a hollow sphere with its rim horizontal, and a small sphere fixed at the centre. The shadow cast by this object on the inner surface of the hemisphere, traced out a circular arc during the time the sun was above the horizon. The Greeks adopted the use of the sun-dial from the Babylonians, and mention is made of one placed in Rome in 290 B.C. The science pertaining to the construction was called *gnomonics*; the Arabians were chiefly responsible for its development. The essential parts of a sun-dial are the dial itself and the style, a piece of rigid metal which casts its shadow on the dial. The dial may be fixed horizontally, vertically, or inclined to the horizon. In the horizontal dial, which is the commonest type, the plane of the style must lie along the meridian which may be found by observing the successive shadows cast by a vertical rod and plummet and bisecting the angle formed by shadows of equal length. This gives the direction of the shortest shadow, and consequently indicates twelve o'clock noon on the dial. The other hrs. are obtained by calculating the angles on either side of the twelve o'clock shadow. It is obvious that sun-dials only tell the time during the day, and then only when the sun casts a distinct shadow. The time, moreover, is true solar time, which has to be corrected by the 'equation of time' to give mean solar time. Portable dials were made and were commonly set in the meridian by the aid of a compass. Ornamental dials formed a feature of many country houses, but the growing perfection of clocks and watches rendered their employment unnecessary after the seventeenth century.

*Clocks.*—A clock is said to have been constructed by Pope Sylvester VII. in A.D. 996, with weights as motive power. Many of the early church clocks were simply striking instruments, with no dial to show the time. In 1288 a clock supplied with bells was put up in Westminster Abbey, and many cathedrals possessed clocks as early as the fourteenth century. The famous clock at Strasbourg Cathedral was constructed in its original form between 1352 and 1370. The regulating mechanism of these clocks consisted of a verge escapement with a balance. The pendulum was adapted to clock mechanism in the seventeenth century, and corrections for temp. were introduced by John Har-

ri-son (1693-1776), and Matteo Campani-Ailmenia; the latter also invented the illuminated dial plate. Many modifications of the general structure of clocks have been introduced from time to time. Clocks which do not strike the hrs. are usually differentiated as timepieces; many play chimes or tunes in addition to striking the hrs. and 'alarm' clocks have a special bell-ringing arrangement which is put into operation by previously adjusting the Time on a separate hour indicator.

*General construction of clocks.*—All clocks made on the usual principles contain their own motive power, which may be a coiled steel spring or a weight suspended by a chain or wire; a train of wheels, by which the motion is communicated to the hands on the dial; a pendulum or other device for regulating the motion of the wheels; an escapement by which the motion of the pendulum is applied to the wheels; there is often a striking mechanism. In the case of a clock actuated by a suspended weight, the motion is first of all communicated to a barrel around which the cord holding the weight is coiled. The axis of the barrel and the arbors of the other wheels are socketed in two parallel plates kept at a constant distance by rigid pillars. Having the same axis as the barrel is the great wheel of the clock, which drives the centre pinion on the arbor of the centre wheel. The arbor of the centre wheel is produced through the front plate to the dial and to it is attached the min. hand. The centre wheel engages with the pinion of the second wheel, and the second wheel with the pinion of the escapement wheel. The pallets of the escapement oscillate on an arbor which joins a lever or crutch at right angles, having at its other end a fork by which the motion of the pendulum is communicated to the escapement. In front of the front-plate of the clock the prolonged arbor of the centre wheel is socketed into a spring pressing against a wheel communicating with the min. hand. The contact is sufficient to ensure the proper motion of the min. hand, but is not strong enough to prevent the adjustment of the hands from the front. Engaged with this wheel is another wheel with the same number of teeth, but bearing on its arbor a pinion which engages with the hour-hand wheel, which has twelve times the number of teeth of the pinion, and is concentric with the minute-hand wheel, though it is surmounted on a hollow tube surrounding the arbor of the minute-hand wheel.

*Pendulum.*—The biggest advance in H. is that due to the introduction of the pendulum. The mechanics of a suspended body had been investigated to some extent by Galileo, but there is some doubt as to the horologist responsible for its adaptation to clock mechanism, though the honour is usually ascribed to the Dutch physicist, Christiaan Huygens. In theory, a pendulum consists of a small heavy mass concentrated at the end of a light string or rod which is free to move about a fixed point. When the arc of oscillation is large, the period of the oscillation depends upon the amplitude of

the swing, but this is not so when the arc of oscillation is small. The forces acting upon the bob of the pendulum are its weight acting vertically downwards, and the tension of the string acting in the direction of the swing. At a given moment the motion of the bob is along the tangent to the arc, and as this is at right angles to the direction of the string, the tension of the string cannot be resolved along the



Victoria and Albert Museum  
AN ENGLISH CLOCK IN SILVER CASE  
c. 1650. BY D. BOUQUET

tangent. The motions of the bob constitute simple harmonic motion, so that the vibration is isochronous, that is, whatever the amplitude of the vibration the periodic time is the same. This result is of the utmost importance in considering the pendulum as a time regulator. It means that whatever the power of the driving mechanism, whether the pendulum is moving strongly or feebly as long as the angle is small, the time taken for it to complete each double oscillation is the same. In clocks, the pendulum is a bob fixed to the end of a rigid bar; the bar itself has weight, so that the centre of oscillation is somewhat above the centre of gravity of the bob. The great desideratum is that the length of the pendulum from point of suspension to centre of oscillation should remain constant.

**Compensation.**—As metals expand on increase of temp., the length of a pendulum tends to increase in hot weather, with the result that the period of oscillation is increased and the clock loses. It is, therefore, necessary to make some contrivance so that the centre of gravity and the whole pendulum shall be moved upwards to the same extent as the expansion due to heat moves it downwards. One of the earliest devices for this purpose is demonstrated in Graham's mercurial pendulum. The bob consists of two glass cylinders containing mercury. By adjusting the quantity of mercury in the glass vessels, the moving upwards of the centre of gravity of the mercury can be made to compensate for the lowering of the centre of gravity due to the increased length of the rod. Another compensation device is that invented by John Harrison in 1726, and commonly known as the grid-iron pendulum. It consists of a framework of metal rods of two different metals, iron and brass being generally used. The rods are so arranged that the steel bars lengthen downwards in expanding, while the brass rods are fixed at the bottom and lengthen upwards. By adjusting the lengths of the respective metals in the inverse ratio of their coefficients of expansion, the expansion upwards can be made to counteract exactly the expansion downwards. An improvement in these methods of compensation has now been effected by the use of 'invar,' an alloy of nickel and steel.

**Escapements.**—The function of an escapement is to apply an impulse to the pendulum to cause it to vibrate and to lock the escapement wheel until the pendulum has completed a vibration. In this way the clock mechanism proceeds in jerks, one tooth of the escapement wheel being advanced for each single vibration of the pendulum. Soon after the introduction of the pendulum, the anchor escapement was invented by R. Hooke. It consists of two claw-shaped convex pallets mounted on two limbs oscillating about an axis at the junction of the limbs. Each pallet is driven in turn into a notch between two teeth and as it is being withdrawn, it receives an impulse from the turning wheel which serves to keep the pendulum oscillating. The pendulum is, therefore, never free, and a recoil is occasioned at the end of the vibration. This disadvantage is obviated in the deadbeat escapement, in which the serrations of the wheel point in the opposite direction. The advantage of this escapement is that there is no recoil so that it is well adapted for clocks in which great accuracy is required. Many escapements are constructed on the 'remontoire' system, in which the escapement has a driving power of its own, supplied either by separate winding by the clock train, or by allowing the pallets to drop on to the pendulum by the action of gravity.

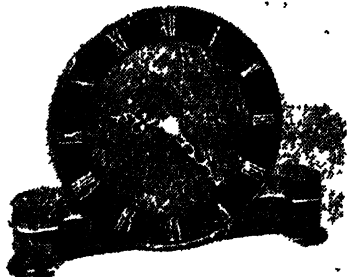
The wheels of a clock are usually made of hard brass and are cut by a wheel-cutting machine adapted to the pitch of the wheel. By pitch is meant the number of teeth to each inch of circumference (for-

cumferential pitch) or to each inch of diameter (diametral pitch). Pinions are sometimes made in lantern form, and with specially-shaped cogs give satisfactory results. It is necessary to have some arrangement in a clock by which the motion of the clock train is not interfered with by the action of winding. This is effected by such a contrivance as Harrison's going ratchet. The great wheel has on its face a ratchet wheel with a click set in the clock frame. Upon this ratchet wheel is set another with its teeth pointing in the opposite direction, and its click set upon the larger ratchet wheel. The winding of the clock, therefore, does not cause the revolution of the larger ratchet, as that is prevented by the click set in the clock frame. Striking is effected by a somewhat complicated mechanism at the front of the clock. The essential part is a small wheel round the hour wheel. The wheel has a step for each hour, so that a lifting piece is allowed to fall into a position along a rack from which the number of notches to the end determine the hour to be struck. A pin on the min. wheel sets the striking mechanism in readiness for going a few min. before the hour. Other additional mechanisms are 'alarm' arrangements, 'tell-tale' contrivances, etc. The alarm is set by turning an indicator upon a small dial; the indicator is attached to a wheel set upon the hour-hand wheel by means of a friction spring. A form of watchman's clock is that in which a set of spikes project round the dial in such a way that when a handle is pulled, the spike which happens to be opposite is pulled in. In the morning the spikes pushed in indicate at what hrs. the watchman operated the clock.

The perfecting of the electric clock, first invented by Alexander Bain in 1843, is a recent development. In one type electricity is used to wind the clock by means of a simple direct current motor, operated from a battery. In others the clock is a simple synchronous motor running in step with the alternators of the power station which supplies the electricity. The frequency of the current generated is constant, being 50 cycles per sec. and (in United Kingdom) is constant for all electricity stations. Clocks are manufactured on a large scale in the United States, particularly in Connecticut and New York. In England the chief centres of the industry are London and Handsworth near Birmingham and there is a recently established industry in S. Wales. Many cheap but excellent clocks are made in the Black Forest region in Germany while the industry also flourishes in Switzerland, France and Italy.

Until very recently the oscillating quartz crystal was the most accurate standard of time measurement. If a constant temp. is maintained, the oscillations in a piece of quartz at its natural resonance frequency can be held to a constancy of one part in a hundred million. The frequency of the oscillations is reduced until they are capable of driving an electric motor. Atomic physics has now provided a further refinement of accuracy; the new primary standard of time and

frequency is the constant natural frequency of the vibrations of the atoms in the ammonia molecule. The oscillations of the quartz crystal are compared with the ammonia absorption line, and corrected when necessary, achieving stability against drift. An immediate benefit may result in radio communication, by obviating the necessity of wide frequency bands.



Smith's English Clocks, Ltd

#### AN ELECTRIC CLOCK, 1950

The clock is finished in walnut and gilt, or padouc and bronze. It is also manufactured with an 8 day level movement.

*Musical Clocks.* — Elaborate musical clocks first made their appearance in England in the early part of the eighteenth century, the name of Charles Clay, official clock-maker to His Majesty's Board of Works, being most prominent. In 1716 Clay, a Yorkshireman of the W. Riding, petitioned Parliament for a patent in respect of a repeating and musical watch or clock of his invention. A formidable rival, Daniel Quare, ex-master of the Clockmakers' Company, produced a watch alleged to answer the same end as Clay's; but though the attorney-general reported in Clay's favour, the opposition of the Clockmakers' Company finally defeated Clay's petition. This set back however did not deter Clay from coming to London, where he eventually acquired so great a reputation as a craftsman that he could count on the co-operation of eminent artists and musicians in making his clocks. One clock, which Clay exhibited before the Royal Family in 1736, is described (R. J. Britten, *Watch and Clock-makers of the World*, 1894) as resembling a large table-clock on a rectangular pedestal, being 84 in. high. In the arch above the dial are a subsidiary dial showing the age of the moon and the day of the month, and the names of the musical pieces played by the clock. These are (i.) *Orlando Corelli's Twelfth Concerto*, (ii.) *Adagio*, (iii.) *Allergo*, (iv.) *Saraband*, (v.) *Allegro*, and (vi.) *The Fugue in the Oratorio of Ariadne*, i.e. the second movement of the overture in Handel's opera (first pub. in 1734). The musical machine consists of a barrel 12 in.

in diameter working on a chime of twenty-one bells, and is contained in the pedestal. Corelli's concerto is in F major, and Handel's overture in the relative D minor, which suggests that the chime was based on an F major scale. Clay's choice of music was of a higher quality and far more elaborate than that supplied by most eighteenth-century makers, whose repertory is usually confined to the fashionable dances, marches and hymn-tunes of the day. There is a direct relationship between Clay and Handel in this connection, for in the index to a vol. of his 'pieces' for a musical clock 'one set is named by Handel *Ten Tunes for Clay's musical clock*, six being original compositions, and five being arias from Handel's own operas. For the making of his musical clock called *The Temple of the Four Grand Monarchies of the World*, Clay had the co-operation of Jacopo Amigoni (or Amigoni), the painter, Louis François Roubiliac, baroque sculptor, John Michael Ræbrack, silver worker, Handel, and Geminiani, the violin virtuoso. This remarkable clock, which was not completed in C.'s lifetime, subsequently passed into the possession of the Princess Augusta, wife of Frederick, Prince of Wales, and mother of George III. Another typical musical clock of Clay's is that in the Royal Palace at Naples. The music of this clock was provided by a little pipe-organ, worked by a barrel, but there was no list of tunes. Tradition has it that this clock was given to Maria Carolina, Nelson's Queen of Naples, by Sir John Aulton, Eng. born Primo Minister of Naples. (See E. Croft Murray, 'The ingenious Mr. Clay,' *Country Life*, Dec. 31, 1948.)

*Watches.*—Early watches were really portable clocks. They were driven by a mainspring, and the motion was regulated by a small balance escapement as in the clocks of the same period. Such instruments were often too large to be carried in the pocket, and were suspended from the girdle by a chain or cord. Frequently they were globular in form, and gained the name of 'Nuremberg eggs' on that account. Early in the sixteenth century an arrangement called the fusee was adopted. This consists of a mainspring enclosed in a barrel on which is wound a piece of catgut or a chain which is also wound upon a spiral drum in such a manner that when the mainsprings weakens as it relaxes, the leverage on the spiral increases, so that the force remains fairly uniform. The form of the watch lent itself to a high degree of ornamentation, and the watches of Tudor times are remarkable for the delicacy of the engraving on their cases. Many of them contained a striking mechanism, and when this was dispensed with a decrease in size and weight became possible. Thomas Tompion (1639–1713) invented a dead-beat escapement for watches, which was afterwards improved upon by George Graham (1673–1751). The next great development was the invention of the curb-compensation for the hairspring by John Harrison (1693–1780), who himself constructed chronometers of marvellous efficiency. In 1713 the Brit. Gov.

offered rewards of £10,000, £15,000, and £20,000 for chronometers which would determine long within an error of 60, 40, and 30 geographical m. respectively. In 1761 John Harrison sent his son on a voyage to Jamaica with a watch of his own construction. It lost one min. fifty-four and a half sec. on the double journey, which was equivalent to a determination of long. within an error of 18 m., according to the terms of the Gov.'s offer. On a subsequent voyage of four months duration to Barbados, one of Harrison's chronometers showed an error equivalent to only ten geographical miles. The reward offered was tardily paid by the Gov. who did not sympathise with the principles upon which Harrison constructed his watches. A modern watch possesses a case for containing the mechanism, a mainspring and winding-up mechanism, a balance wheel and hair spring, and an escapement. The mainspring is a thin strip of tempered steel, and in most modern watches tapers very gradually from one end to the other. The fusee is now little used, and inequality in the driving force is compensated for in other ways. The mainspring was formerly wound up by a separate key, but this is now avoided by connecting the mainspring barrel with the pendant. A push button is also provided by which the wheels connected with the pendant can be thrown out of gear with the barrel wheel and connected up with the hand wheels to set the hands when required. The driving power of the mainspring is communicated to the train of wheels as in ordinary clock mechanism. The function of the pendulum in regulating the speed of the train of wheels is taken up by the balance wheel. This consists of a small brass wheel to which is attached the hairspring, a fine spiral spring with centre of gravity on the axis of the balance wheel. The elasticity of the spring causes the wheel, when impelled from its normal position in either direction, to return beyond its normal position, and the time of oscillation is the same for different impulses within certain limits. The impulse is supplied to the balance wheel by the escapement, which also communicates the rate of oscillation to the train of wheels. The commonest escapement in Eng. made watches is the lever escapement. This device, invented by Thomas Mudge in the latter part of the eighteenth century, is an adaptation of the dead-beat escapement applied to clocks. The pallets are fixed to a lever pivoted at a point midway between the pallets, and furnished with a notch which engages with a small pin on the balance wheel near its axis. The motion is so adjusted that when a tooth of the escape wheel escapes from one of the pallets the pin slips out of the notch and enters it again on the return of the balance wheel, moving the lever sufficiently for the next tooth to escape. The pallets of the lever and the pivots of lever and escape wheel are usually jewelled, and undue motion of the lever is prevented by safety pins. What is called the chronometer or spring-detent escapement (sometimes called the 'detached' escapement) pro-

vides for one impulse only in a double oscillation and the unlocking occurs every other vibration. It is too delicate for use in ordinary portable watches, and is specially adapted for chronometers which are maintained in a horizontal position by gimbals. Compensation for changes due to difference of temp is necessary for two reasons. The expansion of the balance wheel increases the moment of inertia of the wheel so that it requires a greater force to turn it in a given direction. The ordinary compensated balance wheel has a circumference consisting of two or more sections, each of which is composed of an inner bar of steel molded upon an outer bar of brass, this compound bar carrying a

velocity of light. See T. Reid, *Treatise on Clock and Watch Making*, 1849. E. J. Wood, *Curiosities of Clocks and Watches*, 1866. E. B. Grimthorpe, *Hudimentary Treatise on Clocks, Watches and Bells*, 1903. G. F. Gordon, *Clockmaking*, 1925. H. R. Langman and A. Hall, *Electric Horology*, 1927, 1935. J. D. Robertson, *Evolution of Clockwork with a Bibliography of Horology*, 1931. F. W. Britten, *Horological Hints and Helps*, 1934. S. E. Philpott, *Modern Electric Clocks*, 1945.

**Horopter**, see under Vision, DEFECTS OF.

**Horoscope**, term used in the phrase casting the H. in astrology (q.v.).

**Horrocks**, Jeremiah (c. 1617-41), Eng astronomer b. at Toxteth Park, Liverpool



HORS &amp; GLIDERS

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small weight. The inequality of the expansion of the two metals results in a bending of the bar inwards thus carrying the weight towards the centre of the wheel. Such a contrivance requires careful adjustment. Secondary compensation is necessary on account of the weakening of the elasticity of the hairspring through rise of temp. Apparatus designed to record very small divisions of time with great accuracy are called *chronoscopes* (q.v.), and when they are arranged so as to preserve a more or less permanent record, they are called *chronographs* (q.v.). Such mechanisms are often dependent upon the breaking and establishing of electrical contacts and are brought to a high pitch of perfection. Greater and greater degrees of accuracy are constantly being achieved, but it must be remembered that absolute accuracy is not only impossible by the nature of time, but also through the fact that no physical process can be said to be ultimately instantaneous. For instance, if two clocks are supposed to be exactly synchronous, they are not so when viewed from each other their difference being a function of the

After studying at Cambridge he returned to his native place and there began his astronomical observations. In 1639 however he was ordained curate at Hook in Lancashire and there made his observation of the transit of Venus. Among his writings are *Venus in Sole vista*, printed by Hevelius in 1662 and portions of his writings pub. by the Royal Society under the title *Jeremiae Horroccii Opera Posthuma* See J. E. Bailey, *Pilgrims Notebook*, 1852.

**Horsa**, see HENGIST AND HORSAS.

**Horsa**, Brit troop carrying glider, with a wing span of 85 ft. and carrying capacity of three tons of freight or fifteen men with arms and equipment. The fuselage was of box shape, and a wooden frame work ensured easy production. Large numbers were used in the Normandy invasion, at Arnhem and at the crossing of the Rhine.

**Horse**. *History*—There is abundant evidence of the existence in Caesar's time of Brit or Celtic ponies throughout the greater part of the Brit Isles. Some of these breeds, notably the Shetland, have very little altered in the intervening period, and, except as a result of the introduction

of Arabian or thoroughbred blood, show no tendency to increase their size. The large H. was probably unknown until the Norman invasion. Then animals of the Andalusian or Chestnut type were introduced, and from these and the large Belgian or Flemish H., the war H. ridden by knights in armour and later the modern heavy cart H., were evolved. Although the evidence of the oldest writings, sculptures, and frescoes goes to show that Hs. were driven long before they were ridden, the H. was probably employed and bred almost solely for war purposes for a long period. As far back however, as the time of Henry II., the tournament was introduced and H. racing first captivated the Eng. people. But wars, civil and foreign, seriously depleted the H. supply, and in 1493 Henry VII. forbade the export of any H. without royal permission, and of any mare whose value exceeded 6s. 8d. It was Henry VIII. who made H. stealing a cap. offence. During his reign, the weight of armour reached its maximum, and in consequence, large and strong Hs. were in heavy demand. By this time the value of the H. in agriculture had been realised, and the pack H. was in extensive use for transporting goods. The use of state chariots by noblemen virtually originated the present road system and modern methods of travel. Coaches were introduced in the reign of Queen Elizabeth, and the importation of Arabs and other foreign stock laid the foundations of the modern race H. or Eng. thoroughbred. With the improvement of the roads, and the use of coaches, carriages, and lighter vehicles, great attention was paid to the development of the harness H., and the Hackney or Norfolk Trotter was evolved from a foundation stock of Scandinavian Hs., and the Cleveland Bay and the Yorkshire Coach H. were developed.

**BREEDS.**—The majority of Hs. in use in Great Britain belong to no distinct breed, being of a general utility character, such as those used in tradesmen's carts. With the development of motor traction, however, the number of such Hs., formerly much used for omnibuses and cabs, has declined rapidly, and the percentage of pure bred animals has increased. The following are the distinct breeds: the Racehorse, or Thoroughbred, and the Hunter, the Hackney, the Yorkshire Coach H. and Cleveland Bay, the Shire H., the Clydesdale, and the Suffolk Punch; while among ponies are the Polo pony, the Hackney pony, the Welsh, the New Forest, the Highland, the Shetland, the Dartmoor, the Exmoor, the Fell, and Connemara.

The *Thoroughbred* is said to have developed an inch in height in every seven or five years since 1700, and for considerably more than a hundred years has been kept absolutely pure. While it owes much to the Arab all authorities agree that it would not benefit by further introduction of Arab blood. The majority of thoroughbreds are bay in colour, and their number appears on the increase. Chestnut is a fairly frequent colour, blacks and browns are rare, and grey thoroughbreds are practically extinct.

*Hunters* are bred from at least one thoroughbred parent, excellent animals for the purpose being produced by crosses with small Clydesdale or Suffolk mares. Irish hunters have long been considered the best here. A mahogany-brown colour is preferred, black, bay, or dark chestnut coming next in favour. Grey, roans, and light chestnuts are not fashionable. A hunter should be thick and strong on the back and loin, with long powerful quarters and muscular thighs and neatly-shaped and clean hocks. Size, stamina, action, and reliability at fences are essentials in a good hunter.

The *Hackney* H. is the beautiful harness H. of high action, arched neck and fast pace. A Hackney must be over 14 hands high, i.e. exceeding 56 in., but the average height is about 15.3 hands. Hackney-bred carriage Hs. of 17 hands can be obtained. The distinguishing feature of the breed is its very high and free action. It is a powerfully built, short-legged, big, broad H., with an intelligent head, neat neck, strong level back, powerful loins, flat-boned legs and good feet.

The *Cleveland Bay* with its offshoot, the *Yorkshire Coach H.*, which tends again to amalgamate with the parent stock, is the general utility H. There is no better base or foundation for crossing to obtain hunters, cavalry Hs., and harness Hs. The *Cleveland Bay* is about 16 hands 2 in. in height, has a short back, powerful loins, and long quarters. Black zebra-like stripes above the hock, which occasionally occur, are supposed to denote special purity of breeding. The colour of the *Yorkshire Coach H.* is usually dark bay or brown. The mane and tail are black and thick. A fine head, sloping shoulders, strong loins, lengthy quarters, high stepping action, and abundance of bone and muscle characterise the breed which undoubtedly owes something to the Thoroughbred.

The *Shire* is the largest draught H. in the world, commonly attaining a height of 17 hands, weighing as much as 2000 lb. Though immensely strong, it is very docile and intelligent, and has a good free action. The prevailing colours are black, bay, and brown. The short stout legs have a plentiful covering of long hair known as 'feathering,' from the back of the knees and hocks to the pasterns. The neck is well arched, chest wide and full, back short and straight, ribs round and deep, and the quarters long, level, and well down to muscular thighs. The breed is directly descended from the great war H. of medieval times.

The *Clydesdale* is the agric. H. of Scotland. It is somewhat smaller than the Shire, but is claimed to be of finer limb. Bay and brown are the commonest colours, black and grey coming next, and, more rarely, chestnut and roan. The shoulder is more oblique than in the Shire, but the 'feathering' on the backs of the legs approaches the style of the latter. The breed is remarkably active in work, and is possessed of great strength and endurance.

The *Suffolk Punch* is quite distinct from





#### SOME BRITISH AND FOREIGN BREEDS

1, Thoroughbred 2, Irish Hunter (*Farmer and Stock breeder*), 3, Cleveland Bay (*Yorkshire Post*), 4, Shire, 5, Clydesdale 6, Suffolk Punch (*Farmer and Stock breeder*), 7, Percheron (*Sport and General*), 8, Brabant (*Ten Hagen*)

the other native draught Hs., and its clean legs, or freedom from 'feathering,' make it specially well adapted for working on the land. The Suffolk is always a chestnut, varying from light sorrel to dark mahogany. It has long been kept pure, and always breeds true to colour. It averages 16 hands, and sometimes weighs as much as 2000 lb. The Suffolk is famous for its willingness to pull at a dead weight, and is an exceedingly active animal. It has a very finely arched neck, low shoulders, thick withers, and a deep round barrel-like build.

**Foreign Horses.**—The Arab is the most distinguished non-Brit. H. The earliest traces of it go back to the sixth century A.D., and since then the breed has been constantly improved by rigorous selection. It has great powers of endurance, fine intelligence, and rare courage, as well as perfect shoulder action and a light mouth. It is the ideal cavalry H., and was in request by the Remount Dept. of every war office in the world until the development of mechanised warfare. There are sev. Arab studs in Great Britain. Amongst other foreign breeds are the Percheron, the famous cart-horse breed of France (also bred in England), the Brabant of Belgium, the Russian Orloff, the Prussian Trakehner, the Jutland, and the Amer. Trotter.

**Ponies.**—With the exception of the Shetland, Brit. ponies owe much to Arabian and Thoroughbred blood. The pony breeder's object is to compress the most valuable qualities into the least compass, the aim being an animal with a small head, perfect shoulders and true action. Yet a pony must not only be a diminutive H.; it must have true pony character. The various breeds range from 14 hands, or even a little higher, down to 8 hands. The Shetland has been known sometimes to be no more than 26 in. high. Black, bay, and brown are the favourite colours. The Shetlands' sure-footedness, intelligence, and good nature make them ideal companions for children. The Highland pony is the largest and strongest of native ponies, and is unequalled for hardiness and staying power. The commonest type is the Galloway (an Irish word meaning a stout H. or hack). This breed is said to owe some of its features to the Percheron. Allied are the Barra, the Uist, the Rum, and the Skye ponies. The Welsh pony is somewhat similar to the Highland pony, but is a faster animal; in colour bays and browns are the usual shades. The New Forest pony is most commonly a fleabitten grey. Its height ranges from 12 2 to 13 2 hands. The Dartmoor and Exmoor ponies are other perfectly hardy breeds. The Fell pony is a native of Cumberland and Westmorland, used by the farmers for all sorts of work. In colour it is usually black, brown, or bay. The Connemara pony, an Irish breed, supposed to be derived from Sp. crosses with native mares, is a big pony, and is much sought after for polo. A pony suitable for polo must have powerful riding shoulders, with strength across the loins, and muscular

hind-quarters. It has to carry at top-speed weights considered ample for hunters of 15 hands and upwards. All descriptions of native breeds have been drawn on in creating the Polo pony, which should measure from 14 hands to 14 hands 2 in.

**DISEASES.** Amaurosis, or Glass Eye, is a derangement of the optic nerve. The H. carries its head well up, and steps very high. It is incurable, and its detection is very important in buying Hs. Anthrax (*q.v.*) is a very contagious disease, and must be at once reported to the police. Asthma, Broken Wind, or Heaves, is sometimes due to influenza, bronchitis, or pneumonia, but more frequently to bad food, such as musty hay or corn, or to too much exertion after feeding. Two or three grain doses of arsenic once a day in a mash may give relief. Azoturia occurs when animals are too well fed and have too little exercise. After a little work, the H. sweats profusely and ejects large quantities of blood coloured urine. Bleeding is supposed to give relief. Hog Spavin is a distention of the capsular ligament of the hock joint, and is commonest in cart Hs., especially young Clydesdales. A crossing of green tar and turning out to grass has a good effect. Bone Spavin is a bony enlargement on the lower part of the hock joint brought on by injury or over-exertion. Rest, blisters, and surgery are recommended. Bots are the grubs of a gadfly. The eggs are laid in summer on the shoulders and forelegs, and are licked off and swallowed. There is no satisfactory remedy, but a H. singeing lamp should be used to destroy the little yellow eggs. Broken Knees are of frequent occurrence. After washing and dressing with antiseptics, cold water bandages are applied. Bronchitis causes great debility. The H. should be placed in a well-ventilated box, the legs bandaged and warm sheets put on the body and a pail of cold water containing a tablespoonful of nitrate of potash given it to drink. Calculi are stony accumulations, occurring in the large intestine, and commonest in millers' Hs. They are often passed naturally, but strong purgatives must be avoided. Canker in the foot is a growth of horn on the sole, produced by injuries or by dirty wet litter. The H. must be kept dry and the foot dressed with powdered alum and dried tow. Capped Hock, Knee, or Elbow is a swelling due to a collection of fluid under the skin. Apply hot or cold applications and stimulating lotions. Cataract is a pearly-white appearance of the crystalline lens of the eye, which must be carefully looked for in a possible purchase. There is no treatment. Catarrh, or cold in the head, bowels, or bladder is often neglected, but should have prompt attention. Warm clothing, bandaging the legs, a tablespoonful of nitrate of potash, and good varied feeding should restore health. For Colic, or Gripes, two to four ounces of laudanum with two ounces of turpentine in a pint of linseed oil help the attack to pass off. In cases of Conjunctivitis bathe with tepid water to remove the irritant, and apply a boracic acid lotion. Corns generally occur in the

fore-feet. The shoes should be removed and a poultice of cold water and bran applied. Crib biting and wind sucking is often a bad habit, though it may be a form of dyspnoea. Feeding on the ground, providing a muzzle, or substituting iron for wooden stable fittings may effect a cure. Curb is an enlargement of the back and lower part of the hock joint. Rest, cold water bandages to reduce the inflammation followed by blistering and firing are beneficial. Diabetes is characterised by the passing of enormous quantities of urine due to bad food and impure water. Rest, good food, dram doses of iodine in a ball, and twenty five drops of hydrochloric acid in the drinking water are advisable. In Diarrhoea small doses of linseed oil and laudanum will check an attack. Eczema is very contagious. Treat the affected parts with a disinfectant fluid. Enteritis, or Inflammation of the Bowels, is a fatal disease, the pain being continuous, and death often occurs in five or six hrs. Hypodermic injections of morphia and atropine are the safest treatment. Farcy and glanders are allied forms of a highly dangerous and contagious disease which is compulsorily notifiable to the police. With chronic glanders, a H. may go on working and feeding for months with a ragged unhealthy coat and a leaden hue to the membrane of the nostril as the only signs, but such an animal may be a general source of infection. All Hs. and ponies have to be inoculated with mallein before being put down into a coal mine (For fuller details on this, see GLANDERS). Founder, or Laminitis, is an inflammation of the feet. Bleeding often gives relief, as also injection under the skin of a solution of adrenalin. Fractures are of six kinds: 1, simple; 2, compound; 3, compound comminuted; 4, complicated; 5, green stick; 6, impacted. In the second and third cases treatment is practically useless, and the H. is best destroyed. All the bones of the H.'s body are subject to fracture. They must be put in position and splints and bandages applied. Gastritis or inflammation of the Stomach, usually proves fatal. Four ounces of laudanum in a pint of linseed oil will relieve the pain. Injections of sixty to eighty drop doses of morphia and atropine are beneficial. Grouse is an inflammation of the skin, the hind legs of cart Hs. being most subject. Wash with disinfectants, and dust with boracic acid, iodoform, and charcoal. Hernia is a displacement of the bowel. A bandage should be sewn tightly round the body until the rupture is reduced. Larvngitis needs careful attention, as if acute the H. may become a roarer. Mustard mixed with cold water rubbed on the throat generally effects a cure. Steaming the nostrils with eucalyptus oil three or four times a day has a soothing effect. Lock-jaw, or Tetanus, is frequently a fatal disease communicable to man. Anti-tetanus serum injected at the lower portion of the neck has been successful in some cases. Mange is a parasitic disease. Any parasiticide except those containing

arsenic can be applied, but as the disease may be deep-seated or superficial, treatment varies greatly in effectiveness. The disease has been compulsorily notifiable. Nephritis, or inflammation of the kidneys, requires perfect rest, hot clothes, and small doses of linseed oil and laudanum. Pneumonia is much relieved by bleeding, accompanied by a dose of from ten to twenty oz. of linseed oil mixed with one or two oz. of spirits of nitre, and ten to fifteen drops of aconite tincture. Roaring is a peculiar noise made in the act of inspiration, and is a characteristic of unsoundness. Operations sometimes effect a cure. Saddle galls are the result of badly-fitting harness. They should be washed with antiseptics and dressed with zinc and lead lotion. Sidebone, the ossification of one or both of the lateral cartilages at the sides and top of the hoof, is commonest in cart Hs., and is often caused by high-heeled shoes. Hs. with sidebone are unsound. An operation, the use of the bar shoe, and blistering may restore soundness. Strangles is an infectious disease commonest in young Hs. and most seen during the spring months. Abscesses are formed under the jaw, round the throat, and beneath the ears. With good nursing it often passes off mildly. A preventive serum is recommended. Strangles frequently terminates in roaring.

A large vocabulary has attached itself to the breeding and management of Hs. The following is a glossary of terms in more general use: arm, or shoulder, the upper part of a fore-leg from just below the withers, to just above the elbow; bars of the mouth, the spaces between the canine teeth and the grinders; they occur at the angle of the lips and in them the bit is placed; bay, a reddish nut-brown colour with black points; blaze, a stripe of white down a horse's face; calf knee, a knee that bends sideways towards its fellow; knock-kneed; crotchets, chestnuts, or ergots, horny excrescences on the inside of each leg above the knees and below the hocks; chestnut, reddish-brown lighter than bay, but without black points, and frequently with one or more white stockings; clicking, or forking, a defect in a H.'s paces when it knocks the feet against one another; cob, a compact short-legged H.; coffin bone, the bone in the centre of the hoof; coronet, the bony fringe round the top of the hoof; dappled, coat sprinkled with rings or spots of a darker colour; docking, shortening the tail; dun, a dull dark brown generally with black extremities and a black line down the back; elbow, the bony projection just below the junction of a H.'s foreleg and body; fetlock, a lock of short hair hanging from the back of the fetlock joint—the junction of the pastern and the shank or cannon bone; flank, the part of the H.'s side between the ribs and the hip; fleabitten, small red or dark spots on a white or grey coat, also used of a H. with spots on a dark ground; forearm, the part of the fore-leg between the knee and the junction of the leg with the body; frog, the protuberance in the centre of the bottom of the H.'s foot; gaskin, the part

of a hind-leg between the hock and the junction of the leg with the body, grey, the colour composed by a mixture of black and white hairs, a measurement of height of four in, haunches, the fleshy part at the junction of body and hips hock, the backward bending joint on the hind leg, knee, the forward bending joint of the foreleg mark (*infundibulum*), the hollow upon the top of a young H's teeth which by gradually wearing down serves as an indication of age, pastern, the bone joining hoof and fetlock joint, piebald the colour which consists of patches of white and black, points, the extremities of the limbs, roan, a red or blue coat closely flecked with grey hairs, shoulder the upper part of the foreleg from its junction with the body to the shoulder joint, skewbald, the colour consisting of patches of any two colours except white and black, snip, a small patch of white upon the nose, sorrel the colour formed by yellowish or reddish brown hairs, splint bones small bones running from hock or knee to fetlock, star a square white patch upon the forehead, stifle the joint at the junction of the hind leg with the body, thigh the upper part of the hind leg, white stockings, the white colouring of one or more legs of a dark or brightly coloured H, withers the highest point of the back just behind the neck. See also ARAB, BARB, FARRIS, and HORSE RACING. See Sir W. H. Flower, *The Horse* 1891, W. H. Wanklyn, *The Australasian Racehorse* 1910, H. C. Merwin *The Horse his Breeding, Care, and Treatment in Health and Disease*, 1917, Sir J. Macfadyen, *The Anatomy of the Horse* 1922, E. B. Loomis, *The Evolution of the Horse*, 1926, M. H. Hayes, *Stable Management and Exercise*, 1928, W. E. Caldwell *Thoroughbred and Hunter Breeding* 1931, A. J. Lamb *Story of the Horse* 1933, Ministry of Agriculture, *Notes on Horse Breeding*, 1933, Lady Wentworth *The Authentic Arab Horse*, 1940, N. Wat, in *The Biol of the Horse*, 1947, M. H. Hayes, *Veterinary Notes for Horse Owners* (first pub 1877), 1918.

**Horse-chestnut**, or *Aesculus Hippocastanum*, well known species of *Hippocastanaceae*, commonly grown in Britain as an ornamental tree. It was introduced to England early in the seventeenth century from N. Greece and Albania. It has large leaves divided into five or seven long distinct leaflets and the white flowers tinged with yellow or pink, are arranged in tall showy spikes. The fruit is a prickly capsule. It is not related to the sweet or sp. chestnut. See *CIFU*.

**Horse Guards**, name of a building in Whitehall, London, where the offices of the depts. under the command-in-chief of the army (a rank abolished in 1904) were situated. Also the name of a cavalry regiment (see next article). The Whitehall building was built in the eighteenth century, and though no longer the headquarters of the army it is still used for military purposes. At the rear, through an archway, is the Horseguards Parade, where the Trooping of the Colour takes place on the King's birthday.

**Horse Guards, Royal**. Raised in 1661 by the earl of Oxford. It wore blue clothing, hence its secondary title 'The Blues'. It fought at Sedgemoor, the Boyne and Dettingen. In 1812 two squadrons went to the Peninsula, and were present at Vittoria and the subsequent battles. At Waterloo two squadrons formed part of the famous Household Brigade. It served again in the 1882 Egyptian campaign, and during the Nile campaign was employed as 'Landwehr'. During the S. African war (1899-1902) it was at the Relief of Kimberley and at Paardeberg. During the First World War it served in France and Flanders from Mons to the Somme (1918). In the Second World War as part of the Household Cavalry, it served in Syria, as an armoured car unit in N. Africa and Italy, and in Europe as a reconnaissance unit of the Guards armoured div.



HORSE CHESTNUT

**Horse Latitudes**, belt of calm and light variable winds on the polar edges of the N.E. and S.E. Trades commonly applied to the ill-defined tropical belts of high barometric pressure which enclose the globe at 30° N. and S.

**Horse-mackerel**, popular name of *Scomber*, a genus of teleostean fishes belonging to the suborder Acanthopterygii and the family Scombridae. *Trachurus* the Brit. H. is common on our coasts where the young are often found in large colonies sheltering under medusae. They have a compressed oblong body covered with small scales.

**Horsemanship**, see *Riding*.

**Horse**, Master of the, officer of the Court who has charge of the royal stables and of all the horses of the king. His authority extends to all the people employed in the stables and he has the privilege of using the horses—the servants also being at his command. In state processions his place is next to the sovereign. The office, which dates from very early times, is tenable during the time that a particular political party is in power, and the M. of the H. is appointed by letters patent.

**Horsens**, seaport in the prov. of Aarhus, Denmark, situated 25 m. S.W. of Aarhus, on the fjord of H. Pop. 30,000.

**Horse-power**, unit used to denote the power of steam and other engines. James Watt was the man who worked out the value of 1 H.P. after experiments with strong dray horses. In consequence of the exceptional power of the animals employed, Watt's result is in excess of the amount of work an average horse can compass. It represents the amount of work done, or energy expended, when 33,000 lb. is raised 1 ft. in 1 min., and equals 746 watts. The Fr. cheval-vapeur is equal to 4500 kilogrammetres a min. (32,549 ft.-lbs.), or 736 watts, slightly less than the Eng. H.P. The nominal H.P. of an engine is a term which is quite arbitrary, and is rapidly falling into disuse. The formula for obtaining it is  $\frac{D \cdot \sqrt{S}}{15 \cdot 6}$  for high-pressure, and  $\frac{D \cdot \sqrt{S}}{47}$

for condensing engines, where D = the diameter of the piston in in., S = the length of the stroke in ft.

The indicated H.P. (I.H.P.) of a reciprocating engine is given by the formula  $\frac{2 A P R S}{33,000}$ , where A = the area of the

piston in sq. in., S = the length of the stroke in ft., P = the mean pressure on the piston in lb. per sq. in. (ascertained from the indicator), and R = the number of effective strokes per min., one for each revolution of the crank-shaft if the engine is single-acting, or two if double-acting. This formula will not apply in the case of steam turbines, as a statement of the I.H.P. supplies the measure of force acting on the cylinder of an engine, but before the power available for doing external work off the crank-shaft can be obtained, that required for driving the engine itself must be subtracted. The result, when this has been done, is known as the actual, effective, or brake H.P. (B.H.P.) of the engine. For high-class condensing engines 80 per cent. of the I.H.P., as shown by the dynamometer, or 85 per cent. for non-condensing engines, may be taken as the B.H.P., or a little more in each case if the turbines are very large. If the turbines are directly coupled to electrical generators, as is often the case on land, the H.P. can be deduced from the electrical output. Similarly, in an electric motor, if the electrical H.P. (E.H.P.), which is found by the formula  $\text{amps.} \times \text{volts} \div 10$ , and the efficiency of the motor is 86 per cent., 8.6 will be the B.H.P. of the motor. The power required to operate machinery can be exactly measured by connecting it to an electric motor, either as single units, or in groups driven from shafting. The H.P. of a boiler is an expression for the pressure and vol. of steam required to supply an engine of the same H.P. It is a question of the grate area and heating surface, or, in other words, the evaporative capacity to produce the required amount of steam. For convenience, boilers are often so classed, their H.P. under given conditions being stated by the manufacturers.

**Horse-racing**. The qualities of speed and endurance for which the horse has always been notable, irrespective of any conscious or artificial process of selection, would naturally suggest the inference that H. is a sport of some antiquity. Such is indeed the case, for classic writers record systematic H. at the Grecian Olympiads in 600 B.C., while G. Grote, *History of Greece*, 1846-56, speaks of races for one-year-old colts. A tolerably full historical account of turf matters up to the middle of the nineteenth century will be found in J. Whyte's *History of the British Turf*, 1810, from which it seems that the earliest mention of race-horses (or 'running horses,' as they were called) in Brit. national annals is not till the ninth century when Wm. of Malmesbury (q.v.) that Hugh Capet in soliciting the hand of Ethelwita, King Athelstan's sister, in marriage, sent over a present of Ger. 'running-horses.' It was not, however, till the reign of Henry II. that horse-races began to be frequent. They were generally held at Smithfield, which at that time was the prin. horse-mkt. of England. The first race of which a description exists took place, possibly at Newmarket, between animals owned by Richard II. and the earl of Arundel. But in the public favour tournaments and jousts held the first esteem, and by the Tudor period, H. had ceased to be a great public amusement. The sport revived under James I., at which time Garterly in Yorkshire, Croydon, and Enfield Chase were the customary places for the best races. It was not till about 1646 that races took place at Newmarket, although James I. built stables there near his palace. In Lincoln (on Lincoln Heath) ann racing began about 1680.

Generally speaking, it may be said that H. owes its position as pre-eminently the national pastime to the royal favour of the Stuart monarchy, especially Charles II. The earlier Hanoverian monarchs do not appear to have taken so kindly to the national sport; but if during that period H. was not the sport of kings, it certainly became that of the Princes of Wales. Prince George, afterwards George IV., owned race-horses in 1781. The memory of the late King Edward VII., especially when Prince of Wales, will long be cherished as a patron of H. Epsom, which from the fact of the 'Derby' being habitually run there, is probably the most popular racetrack in England, does not appear to have been the scene of H. till 1618 (see *Pope's Thru*). The Derby Stakes were inaugurated in 1780, but although that race continues to be regarded as the 'blue riband' of the turf, the number of entrants has at times compared unfavourably with that in other less classic races where the stakes have often been particularly much more valuable. The St. Leger sweepstakes were instituted by a Colonel St. Leger in 1776, who lived near Doncaster Tn. Moor. The 'Ladies Race' of the Oaks first took place in 1778. Ascent as a popular H. since can trace its hist. from 1711. But practically all the great

ann. steeplechases, like the Grand National, the Liverpool, and the Sandown Park Eclipse, began long after the estab. of the great classic flat-race meetings.

Some occasional steeplechasing across country is traceable, according to the Badminton Racing book, as far back as 1752, Ireland apparently being the home of its early popularity. The term 'steeplechasing' itself merely denotes the fact that some convenient goal like a neighbouring church steeple was selected as a point in the race for the horses to mark on in their cross-country run over

event. In 1808, as a result of the efforts of Lord Suffolk, Lord Coventry, the duke of Beaufort, and others in the interests of fair play, the Grand National Hunt Committee was formed as the authoritative governing body over steeplechasing, the Jockey Club refusing to assume control over disputes unconnected with flat-racing. The recognised rules and regulations of steeplechasing are to be found in Weatherby's *Steeplechase Calendar*.

The Jockey Club is the governing body over all matters appertaining to flat-racing. Its first existence is variously



*Fox Photos*

THE SCENE AT THE FINISH OF THE 1947 DERBY, WON BY 'PEARL DIVER'

ditches and hedges. (See also POINT TO POINT STEEPLCHASES.) Steeplechasing as a regulated sport is not recorded much earlier than about 1820, when plates were put up for prizes, and restrictions placed on the weights of the riders. The sport became increasingly popular some ten years later, when the first Liverpool steeplechase was run round a two-mile course near Aintree. For the first time the conditions of the race were so regulated as not only to secure for the spectators an uninterrupted view of the race, but to ensure fair play for all the competitors. After this, meetings were instituted at St. Albans, Aylesbury, and other places, but the contest originated at Liverpool, especially after the selling race became superseded by the Grand National which has continued down to the present day to be the prin. ann. steeplechasing

assigned to the years 1750 and 1758. The first express mention of it, according to Dey's book on H., occurs in R. Heber's *Racing Calendar* for 1758, in connection with a regulation passed in that year directing all riders to pass the scales when they came in, under pain of disqualification. This, however, would seem to indicate that the club had by that time got into full working order, and the tradition of 1750, as the year of its foundation, is further confirmed by the fact that in 1752 a room on the site of the present club buildings was erected and leased to the duke of Lancaster and the marquis of Hastings in trust for fifty years as the place for general meetings of the aristocracy of the racing world during the Newmarket meetings. (See also the Badminton Racing-book.) The Jockey Club promulgates the rules of racing and

amends them according to the dictates of the racing world; it also regularly appoints stewards, and defines their powers. The rules provide that the full programme of every meeting must be put in the *Racing Calendar*, with a statement of the names of two or more persons as stewards, and of the various other racing officials—the judge, clerk of the course, handicapper, stakeholder, clerk of the scales, and starter. The clerk of the course is solely responsible to the stewards for all general arrangements. The principal, at all events, most essential, function of the clerk of the course is to canvass, months before the meeting, for entries for the races.

Hurdle racing is also a popular form of race. In the early days of this kind of race the hurdles were customarily about 5 ft. in height and had very tightly in the ground, but the modern hurdle is not above 4 ft high, and is put so loosely in the ground that a horse failing to clear it may easily carry it along with him to his own great danger. The whole art of hurdle racing is to take the hurdles smoothly and easily without a perceptible pause either at making the spring or at landing.

The principal flat racing events in England, and the distances are (1 m.) The Derby Stakes (1 m. 4 furlongs), 2000 Guineas (1 m.), 1000 Guineas (1 m.), Oaks (1½ m.), Ascot Cup (2½ m.), St. Leger (1 m. 6 furlongs, 132 yds.), Lincolnshire Handicap (1 m.), Newmarket Stakes (1 m., 2 furlongs), Ascot Stakes (2½ m.), Royal Hunt Cup (7 furlongs, 166 yds.), Gold Vase, Ascot (2½ m.), Cesarewitch (2 m., 2 furlongs), Coronation Cup (1½ m.), Coventry Stakes (5 furlongs), Grand Prix de Paris (1 m. 7 furlongs), Nunthorpe Stakes (5 furlongs), Cheveley Park Stakes (6 furlongs), Cambridgeshire (9 furlongs or 1 m.), Dewhurst Stakes (7 furlongs), Champion Stakes (1 m. 2 furlongs), November Handicap (1½ m.), Middle Park Stakes (6 furlongs), Free Handicap (7 furlongs), Goodwood Cup (2 m., 5 furlongs).

The season for flat-racing in England is between March 21 and Nov. 22, or thereabouts. The rules provide for two races of 1 m. or upwards—not being selling races—for each day's racing, and that no race shall be run over a less distance than five furlongs. It is not often, however, that a two-mile course is run, though at Ascot the Gold Cup course is 2½ m., the Alexandra Stakes is 2 m. 6 furlongs 85 yds. while the Cesarewitch course is 2 m. 2 furlongs. The Derby course has been shortened 29 yds., owing to the rounding of Tattenham Corner, and is now 1 m. 4 furlongs exactly. The Derby and St. Leger are restricted to horses three years old, both fillies and colts being eligible, and except that fillies have a sex allowance of 3 lb., all the horses carry the same weight. The Oaks is for fillies only. 'Weight-for-age' races are open to horses of varying ages, horses of equal age carrying equal weights the younger less than the older. Horses of six years and upwards give weight, according to a prescribed scale, to younger competitors.

(A scale of Weights for Age will be found in *Ruff's Guide to the Turf*.) The scale is put under the sanction of the stewards of the Jockey Club as a guide to race-meeting managers, but is not intended to be imperative. The third kind of race is the handicap, which did not become a regular feature much before 1820. In handicaps the idea is to equalise the chances by apportioning to each horse the weight which, in the opinion of the official handicapper, will bring them together in a dead heat. The rules provide for the due pub of the conditions of any handicap and the date at which the entries close. The weights assigned are put in the *Racing Calendar*, and owners who do not agree with this handicap can cut their further loss by declining to accept—in other words, by becoming non-starters.

The controversy over the forward and backward seat for jumping has resulted in a marked preference for the backward seat for steeplechasing. The flat racing seat has also undergone changes. The rider usually rides with short leathers, hunched forward on the horse's neck, with his weight on knees and stirrup-lemons. With the old seat the jockey rode with longer leathers, standing in the stirrups. The American jockey, Tod Sloan, first introduced the new seat into England.

**Betting**—All contracts or agreements by way of gaming or wagering are null and void by the Gaming Act of 1845, and securities like cheques or bills of exchange given for money lost on wagers are void under an Act of 1711. (In the case of *Holfy Hamilton*, decided as late as 1898, it was held that it had always come under the wagers contemplated by the Act of 1711.) Contributions or subscriptions or agreements to subscribe or contribute towards any plate prize or sum of money to be awarded to the winner of any lawful sport (including, of course, H) are expressly excepted from the operation of the Gaming Act, 1845 (see also **BETTING, CONTRACTS, GAMING, and GAMBLING**). The business of bookmaking is only illegal if carried on in contravention of the Betting Act, 1853, which Act prohibits 'the keeping or using a house or other place' for betting purposes, and the whole question turns on the judicial construction of a place within the meaning of the Act. It has been held that a universal's enclosure is not such a place that word apparently being construed *quodam generis* with house, office, or room. Betting is permitted with a bookmaker who acts as an agent for his client, and with whom accounts are settled weekly. The tote, a mechanical betting machine, is now installed on many racecourses, and portable totes are also used.

Before the Second World War, H. was becoming more popular all over Europe and America. The Auteuil and Longchamp races of France were as notable as many Eng. race meetings, the chief races run there being the Derby, Oaks, and Grand Prix. In Germany many great meetings were annually held, and in Austria and Italy the sport was also developing. In Belgium there is a

Jockey Club with headquarters at Boisfort, while race-meetings were held at Antwerp, Ostend, Bruges, and Spa. H. was also making considerable strides in the E., particularly in India and Malaya. Foreign-owned horses are allowed to compete in Eng. races, but so far a similar privilege has not been extended to the horses of Eng. owners on some foreign courses. Eng. racehorses, however, are sought after by foreign buyers for breeding purposes. See *Ruff's Guide to the Turf*; H. S. J. Bourke, *Horse Training*, 1923; J. Hislop, *The Turf*, 1949.

**U.S.A.**—In what is now the U.S.A. H. in the beginning was largely confined to the S. states whose settlers were chiefly Brit., and brought with them the habits and traditions of the home country. When New York became a Brit. instead of a Dutch colony, H. was introduced there, and that state is still the locale of some of the best race-tracks in the country. Before the Civil war New Orleans was famous as a racing centre. Kentucky is pre-eminently the race-horse breeding state. The section near Lexington, known as the Bluegrass region, is filled with stud farms, and Kentucky horses are excelled by none. The best-known tracks are Belmont Park, Aqueduct, Empire City, and Jamaica near New York City, the one at Saratoga, New York, four near Baltimore, four near Chicago, Churchill Downs in Louisville, Kentucky, and Latonia in Kentucky, opposite Cincinnati. Most of the tracks in the U.S.A. differ from those in Great Britain, in that they are circular, and the turf has been removed, the roadway being made of dirt. In recent years the totalisator, known in the U.S.A. as the Parimutuel, has been installed in many race-tracks by state law, the state getting a percentage of the receipts, and bookmakers being barred.

**Horse-radish** (*Cochlearia Armoracia*), cultivated plant belonging to the natural order Cruciferae. The root has a strong pungent taste which closely resembles mustard, and is used either grated or made into a sauce, as a condiment with beef.

**Horse-shoeing**, see **FARRIER**.

**Horse-tails**, see **EQUUS TAIL**.

**Horsforth**, tn. situated in the W. Riding of Yorkshire, England, 5 m. to the N.W. of Leeds. It manufs. woollen goods. Pop. 12,200.

**Horsham**: (1) mkt. tn. in the co. of Sussex, England, lying 18 m. N.W. of Brighton, and about 36 m. S.S.W. of London. Among its buildings of interest are the old church, which has been restored, the grammar school, and corn exchange. The chief industries are tanning, brewing, iron-founding, and coach-building. Here also is situated Christ's Hospital, which was moved from London P. 21,000. (2) Tn. on the Wimmera R. approximately 200 m. N.W. of Melbourne, Australia, centre of the Wimmera dist., the largest wheat growing area of Victoria. The tn. has a very modern tn. hall (seating 1000), 7 churches, base hospital, and a High School, and State School. The chief industries are flour milling, agric. implement foundry, textile

machinery and ladies' clothing manuf. Other primary products associated with the tn. are wool, fruit, tomatoes. Pop. 6500.

**Horsley, John Calcott** (1817–1903), Eng. artist, b. at Brompton, London. In 1856 he was elected an R.A., and from 1862 to 1897 he was treasurer of the Academy. His best works are those dealing with everyday life. Among his works are 'Rent Day at Haddon Hall', 'Caught Napping', 'L'Allegro, il Penseroso', and 'The Healing Mercies of Christ'—the altar-piece in St. Thomas's Hospital chapel.

**Horsley, Samuel** (1733–1806), Eng. prelate, b. in London, and educated at Westminster School and Cambridge. In 1759 he became rector of Newington, a living which he held till 1793. He devoted a great part of his time, however, to a controversy with Dr. Priestley on the doctrine of the divinity of Christ. Among his other preferments may be mentioned that of bi-hop of St. David, in 1788, Rochester in 1793, and St. Asaphs in 1802. He ed. the works of Sir Isaac Newton (1785). See J. Priestley, *Tracts in Controversy with Horsley*, 1815; R. Hall, *Remarks on Horsley's Sermons*, 1819.

**Horsley, Sir Victor Alexander Haden** (1857–1916), Brit. surgeon and neurologist, b. at Kensington, London. He was prof. superintendent of Brown Institution 1881–90; secretary to the Royal Commission on Hydrophobia, 1885; surgeon to the National Hospital for Paralysis and Epilepsy, 1886; Fullerian prof. at the Royal Institution, 1891–93; president of the Pathological Section of the Brit. Medical Association, 1892–93; prof. of pathology, Univ. College, 1893–96. From 1906, he was Emeritus prof. of clinical surgery and consulting surgeon at Univ. College Hospital. One of the leaders of the medical crusade against alcoholism; and author, in collaboration with Dr. Mary Sturge, of *Alcohol and the Human Body* (1907). Among his other works are: *Experiments upon the Functions of the Cerebral Cortex* (1885), *Brain Surgery* (1887), *Hydrophobia and its Treatment* (1888). While serving as consultant with forces in Meopotamia he suffered heart-stroke, and died at Amara.

**Horst Wessel Lied**, rallying song of the Ger. National Socialist or Nazi Party, the words of which were written by a student, Horst Wessel, who was born in 1907 and was killed in 1930 in a Communist-quarter of Berlin where he lived and commanded a section of the *Abteilung* or Storm Troopers of the Nazis. No certain details exist of the precise manner of his death, but sev. persons suffered death, for their supposed implication in it, at the hands of the Gestapo. The song was sung to the tune of a music-hall song which was popular amongst the troops in 1914.

**Horta**, cap. of the is. of Fayal, belonging to the Azores group. It is situated on the S.E. coast of the is., and is also the cap. of the dist. of H. Pop. about 7000; dist., 52,700.

**Horten**, tn. situated on Oslo Fjord, Norway, about 30 m. S.W. of Oslo. It



is a naval port, and has an arsenal and an observatory. Pop. 10,000.

**Hortense Eugénie de Beauharnais** (1783-1837), queen of Holland, the daughter of the Empress Josephine by her first husband, was born in Paris. In 1802 she married Napoleon's brother, Louis Bonaparte, king of Holland. On the fall of Napoleon and his family in 1815, she fled to Switzerland. The youngest of her sons afterwards became Napoleon III. See T. A. Taylor, *Queen Hortense and her Friends*, 1907; Mlle. Cochelet, *Mémoires sur la reine Hortense et sa famille*, 1907; J. Hauoteau (ed.) *Mémoires de la reine Hortense publiés par le Prince Napoléon*, 1937.

**Hortensius, Quintus** (114-50 B.C.), surnamed Hortulus, was, after Cicero, the most famous of the Rom. orators. He was the son of Q. Lutatius Catulus, and so belonged to the aristocratic party. He supported Sulla in the civil wars, fought during two campaigns (90-89) in the Social war and became consul in 69 B.C. In 63 B.C. he came into conflict with Cicero and, on Pompey's return from the E. in 61 B.C. retired into private life. His speeches are not extant, but are described by Cicero as Asiatic and florid in style.

**Horthy de Nagybanya, Miklos**, Hungarian admiral and regent; b. 1868, of noble family at Föred in Szolnok comitat. Studied at naval academy, Fiume. Became A.D.C. to Emperor Franz Josef, and served in naval dept. of war ministry, Vienna. In the First World War, commanded cruiser *Norwa*—attacked Italy at Porto Corsini, San Giovanni di Medua, and Otranto. Severely wounded in last-mentioned engagement, May 14, 1917. When peace came, H. was placed in command of the navy of the dual monarchy: when that monarchy fell, he returned to Hungary; and, after the collapse of Bela Kun's Gov., he organized its anti-Bolshevik successor—entering Budapest, 1919 and assuming the title of 'Administrator of the Realm' (1920). In Feb. 1920 he was elected regent of Hungary by the national assembly. Twice in 1921 he used force against the ex-Empress Karl (Charles I.), who attempted to become king of Hungary. He rose to power as the safeguard of the Hapsburg Monarchy, but kept his position as protector of the interests of the big landowners. Described by Count Karolyi as the 'Hungarian Quisling,' he was the first to introduce fascist methods in Hungary and promoted a rapprochement with Italy. He supported wholeheartedly Ger. militarism, because Hungarian landlords always needed the help of Germany to carry on successfully a reactionary policy. As a reward for stabbing his ally Yugoslavia in the back in 1941 he secured parts of Transylvania, Slovakia and the Banat but soon found that he had forfeited Hungarian independence. His regency ended in 1944.

**Horticultural Colleges**, see **HORTICULTURE**.

**Horticultural Societies** were originated in order to advance the study and practice of horticult. What was probably the

first H. S. was estab. in Belgium in 1780. The *Royal Horticultural Society* of London was founded in 1804, and received a charter in 1809. The Society holds two shows yearly, one, the Spring Show, in the Royal Hospital Gardens, Chelsea, in May, and the Autumn Show in Sept. or Oct. The headquarters are at Vincent Square, S.W. 1 and the gardens are at Wisley, near Ripley, Surrey. Other important H. S. in the Brit. Isles are the *Birmingham Botanical and Horticultural Society*, founded 1829; the *North of England Horticultural Society*, the *Glasgow and West of Scotland Horticultural Society*, and the *Royal Horticultural Society of Ireland*, founded in Dublin in 1830. In the U.S.A. the *Horticultural Society of New York* was founded in 1900 and incorporated in 1902. Among many others there are the *Horticultural Society of Pennsylvania* and the *Massachusetts Horticultural Society* in Boston. In France there are H. S. in Paris, Le Havre, Lyons, and Marseilles. Other countries with horticult. or allied societies are Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Holland, India, Italy, Japan, Poland, Portugal, Sweden, Switzerland, and Russia. The first international horticult. congress was held at Brussels in 1864.

**Horticulture** (Lat. *hortus*, garden, and *cultura*, culture), is the scientific art of garden cultivation, and includes the growing of flowers, fruit, and vegetables. Almost every Eng. co. now provides special facilities for the study of H. and many offer co. council scholarships. The chief colleges which make a speciality of horticult. education are the Horticult. College, Swanley, Kent (founded 1889); Studley Agric. and Horticult. College for Women, Warwickshire; the Agric. and Horticult. College, Wellfield; and a School of Gardening for Women at Edinburgh. The Royal Horticult. Society holds ann. examinations in April. The univs. of Cambridge and Reading, and the colleges of W. and E. of Scotland possess depts. of agriculture and H. Courses in H. usually include outdoor gardening, the care of hot-houses and hotheds, and in many cases poultry raising. See **BOTANY**; **BIRDS**; **FISHS**; **FLORA**; **FLOWERS**; **FLOWER SHOWS**; **FRUIT**; **GARDEN ART**; **GARDENING**; **HERBS**; **HOUSEHOLD**; **LAWNS**; **PLANT HORMONES**; **PLANTS**; **SHRUBS**; **SOIL**; **TOPIARY**; **VEGETABLES**.

**Hortobágy Pusztai**, part of the Hungarian plain W. of Debreczen, with cattle-rearing industry. Area, 322 sq. m.

**Horton, Robert Forman** (1855-1933), Eng. Congregational minister, b. in London, and educated at Shrewsbury and New College, Oxford. In 1877 he was president of the Oxford Union, and in 1879 he became fellow of New College and lecturer on hist. In 1880 he was appointed pastor of the Lyndhurst Road church, Hampstead. In 1898 he was the chairman of the London Congregational Union, and in 1903 of the Congregational Union of England and Wales. His pub. include *Inspiration and the Bible* (1888), *The Book of Proverbs* (1891), *The Apostles*

*Creed* (1895), and *The Teaching of Jesus* (1895), *The Trinity* (1901) and *Pastoral Epistles* (1901), *The Holy Spirit* (1907), *The Early Church* (1908), *Great Issues* (1910).

Horton, Sir Max Kennedy (b. 1883), Brit. admiral. He entered the Royal Navy at the age of seventeen and served in submarines during the First World War, gaining the D.S.O. with two bars and the Legion of Honour. He was promoted to Captain in 1920 and commanded the 1st Submarine Flotilla, Atlantic Fleet, 1922-24. In 1926 he went to the Admiralty as Assistant Director, Mobilization, and in 1928 served for two years as Chief of Staff to the Commander-in-Chief, Portsmouth. In 1932 he was appointed Rear-Admiral, commanding

i.e. 'Hôr the child,' when he is represented as seated on a lotus-flower with his finger in his mouth, perhaps as a symbol of secrecy and silence. The name Hôr was also probably applied to lesser divinities, but to all forms the falcon was held sacred, and the name Hôr was the commonest title of the king in the earliest dynasties. The N. kingdom in particular was under the patronage of H.

Horus Apollo, see HORAPOLLO.

Horwich, tn. and urb. dist. in Lancashire, England, 6 m. W.N.W. of Bolton. It has extensive locomotive works, and stone is quarried in the neighbourhood; other industries are bleaching, cotton-spinning, and the manuf. of bricks and tiles. Pop. 14,900.

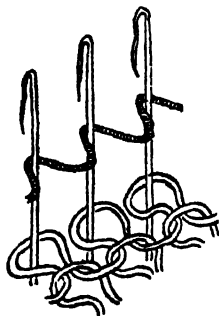


FIG. 1

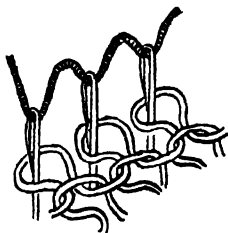


FIG. 2

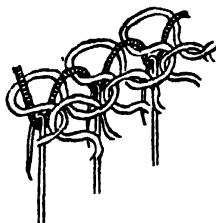


FIG. 3

2nd Battle Squadron (1933) and 1st Cruiser Squadron (1935); in 1936 Vice-Admiral, commanding Reserve Fleet (1937-39). At the beginning of the First World War he became Vice-Admiral, Submarines, and many early Brit. successes in the submarine warfare were due to his efforts. From 1912 until the end of the war he was Commander-in-Chief, Western Approaches, and was largely responsible for the success of the counter-offensive to the German U-boat campaign. H. retired at his own request in Nov. 1945. Orders conferred on him in the course of his long and successful naval career include C.B., 1934; K.C.B., 1939; G.O.B., 1945; Orders of St. George and St. Anne (Russia); Grand Cross of the Order of Orange Nassau (Netherlands); Commander of the Order of the Redeemer (Greece). He holds the silver medal for saving life on the occasion of the loss of the P. & O. steamship, *Delhi*, which ran aground off Cape Spartel Morocco, Nov. 13, 1911. In Jan. 1946 he was appointed Bath King of Arms of the Order of the Bath.

Hortus Stocus, see HERBARIUM.

Horus (Egyptian Hôr), in anct. Egyptian mythology, was the sun-god and equivalent to the Grk. 'Apollo.' He is sometimes identified with Harpokrates,

Hosanna, shout of praise and adoration used by the multitude at the triumphal entry of Jesus into Jerusalem (Matt. xxi. 9).

Hosea, first of the twelve minor prophets according to the Biblical order. Nothing is known of him beyond what is told us in the Book of II. From this we learn that he was a native of the N. kingdom of Israel, and that his father's name was Beeri. The period of his prophecies is given in the first verse: 'In the days of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah, and in the days of Jeroboam the son of Joash, king of Israel.' Since the last-named king d. during the life of Uzziah, those dates are not in full agreement. The prophecies fall into two parts: (1) Chapters 1-3, which tell the story of the prophet's marriage with Gomer the daughter of Diblaim, a profligate woman, and of the birth of his three children, to whom allegorical names are given (I. 4, 6, and 9). The application of this story is then made to the relations between Yahweh (Jehovah) and his people. (2) Chapters 4-14, wherein he denounces more fully the particular sins of unfaithfulness committed by the Israelites against Yahweh, such as their introduction of idolatrous ceremonies and their alliance with and trust in foreign nations. The

question as to whether the account of the prophet's marriage is truly biographical, or is merely introduced to give point to the later accusations has been much discussed. There seems to be no sufficient reason why it should not be biographical. There are some interpolations such as (1) those passages which extend the application of the prophecies to the S. kingdom of Judah (2) those which interrupt the denunciation to speak of a period of final happiness. See A. Simson, *Der Prophet Hosea*, 1851. W. R. Smith, *Twelve Minor Prophets*, 1876. and studies by S. J. Brown, 1932. L. J. Birns, 1932. G. C. Morgan, 1934. R. H. Wheeler, 1948. also works by W. Nowack, A. Sayce, and B. Duhm.



FIG. 4

Hoshangabad, tn. and dist. of India in the Verbudda div. of the Central Provs., on the l. b. of the R. Nerbudda, 40 m. S. S. E. of Bhopal. The chief industry of the tn. is brass working. Pop. 12,000. The prin. crops grown in the dist. are wheat, millet, and oil seeds. Area 4500 sq. m. Pop. 446,000.

**Hoshes**: (1) original name of Joshua (Nu. xii). (2) ruler of Ephraim under David (1 Ch. xxvii). (3) the last king of Samaria who slew Ickah son of Rimaliah. Assyrian inscriptions show that he was of the pro-Assyrian party in Israel and acted in concert with and as the puppet of Tiglath pileser III. But doubtless H. felt the Assyrian tribute burdensome and thereafter sought for greater independence by alliance with Sava king of Egypt. The non payment of his tribute brought Shalmaneser's forces against his cap. which was besieged for three years. Shalmaneser died and was succeeded by Sargon who conquered H. and took him prisoner (2 Kings xvii).

**Hoshiarpur**, cap. of a dist. of the same name in the Jullundur div. of the Punjab India, 62 m. N. of Amritsar. It has manufs. of cotton goods, inland wood work, and lacquer. Pop. 21,285. The dist. exports sugar, rice, and other grains, tobacco, and indigo. Area 2241 sq. m. Pop. 930,000.

**Hosiery** In its limited sense refers to the manu. of stockings (hose) but the term is used to designate all textile fabrics which are manufactured on the looped web principle and knitted goods, whether made by hand or machinery.

**Hand knitting** requires very few and simple implements, consisting of two or more straight needles. On to these an indefinite number of loops are cast, made of one continuous thread of yarn which is passed through the previously made loops to make fresh series, and left hanging free. The needles may be of steel, bone, wood or plastic and of any length or thickness. If only two are used the fabric will have a selvedge on both sides. If three or more are employed a circular web will be formed. See further under KNITTING.

**Frame work knitting**, was introduced by the Rev. W. Lee when he invented the stocking frame in 1589. This frame differed from the principles of hand knitting in having a separate needle for each loop instead of casting all the loops on to one needle. Each needle consists of a shank with a spring pointed hook which can be pressed into a socket in the shank. The following diagrams are to show the formation of the knitted loop with this type of needle. All other machine parts have been omitted to give a clear view of the stitches and needle. Fig. 1 shows the new row of loops being formed whilst the fabric is held lower down the needle. In Fig. 2 the needles have been lowered to allow the loop into the hook of the needle. The hook has been closed and is still descending into the loop of the previous row of stitches. Fig. 3 shows the old loops rising above the needles and descending on the new loops which are still held in the hook of the needle. Fig. 4 shows the needles rising to their original position with the new row of loops sliding down the shank of the needle.

The first fabric made by Lee was a flat piece with selvedge on both sides from which the garment had to be cut to shape and sewn up but he soon learned to fashion by transferring loops at the edges, inwards to narrow and outwards to widen. In Lee's machine the thread had to be placed over the needle by hand and it was not until 1857 that Luke Barton invented the first successful machine fitted with self acting mechanism for fashioning known as the straight bar rotary frame.

**Barp knitting** varies from frame work knitting in having a separate thread for each needle instead of the same thread for the whole row. By the invention of the Dawson wheel (1791) the threads can be laid in any direction and thus give greater scope for variety of design in pattern and colour which make this form of knitting specially suitable for household fabrics.

**Circular knitting** was made possible by a machine patented by Sir Marc I. Brunel in 1816, which he called the tricoteur. This produced a tubular web but did not come much into use till improved upon by Peter Claussen of Brussels in 1844. The pro-

duction of the latch needle by Townsend in 1838 helped the production of cheaper circular fabrics. The seamless stocking (as made on the circular machine) is woven in strong formation i.e. in endless succession whereas on a fashioned knitting-machine each hose is made and cast off.

*His work* was the first variation of the plain fabric produced in Lees's machine, and was produced by an invention of Jedediah Strutt in 1758, by which a second set of needles, placed at right angles to the first, drew their loops to one side, while the first set of needles drew theirs to the other side of the frame. Lee's frame had only sixteen needles for 3 in. whereas modern machines have as many as 120 needles for 3 in. Some of the most modern knitting frames work at a great speed. One with thirty draws of 476 needles each has in all 11,240 needles, each of these form loops at the rate of 80 in a minute so that 1,142,400 loops can be formed in a minute (the speed of an expert hand knitter is 100 loops per minute).

The materials used in hosiery are cotton, wool, silk and many varying mixes such as Rayon and Nylon. In the trade term 'stocking' is obsolete and 'sock' is used only for children's H. Men's socks are called *half-hose* and line length H is known as *three-quarter hose*. The two chief methods of making are *seamless* and *fully fashioned*. See J. Chamberlain *Learnings and Patterns* 1932. Miss Hosmer Mills, U.S.A., *The Stocking Machine*, 1931. A.W. Eley *Stocking*, S. L. C. *Textile Industry*, 1936.

**Hosmer, Harriet** (1830-1908), American sculptor, native of Watertown, Massachusetts, U.S.A. She studied under Gibson in Rome. Her animated and original statue of 'Puck' was a great success. Her other best works are Zenobia in chains, 'Beatrice Cenci', 'A Sleeping Faun', and 'A Waking Faun'. Certain technical processes of the art of sculpture are of her invention.

**Hospice** (Lat. *hospitium*, 'entertainment') name given to the homes of rest provided as a shelter for travellers passing over the Alps by the various monastic orders. The most famous Hs are those on the Great St Bernard tunnel 1962, on the St Gotthard dating from the thirteenth century, on the Mt Cenis, the Simplon and the Little St Bernard.

**Hospitalist**, com. in Barcelona, Spain, 1st m S.W. of the town of Barcelona. Pop. 6900.

**Hospital Fund, King Edward's**, founded in 1897 by King Edward VII when he was Prince of Wales, to commemorate the sixtieth anniversary of his mother's reign. Its object is to secure adequate support of the hospitals and convalescent homes of London. Each individual claim is considered on its merits. The total distribution in the first year was just over £50,000, and is now nearly £100,000. In 1947 the grants to hospitals and convalescent homes was £306,250, funds in hand (including gifts to cash) being £6,500,000. With the disappearance of the distinction between voluntary and

publicly provided hospitals under the provisions of the National Health Service Act, 1948 the fund, consistently with the powers conferred by its Act of Parliament of 1907, may be used for the 'support, benefit or extension of the hospitals of London.' All such things as come within the scope of the above provision and such as are incidental or conducive to it will come alike within the scope of the fund (Lord Catto). The President of the fund is H.R.H. the Duke of Gloucester.

**Hospitaliers Knights** (OF *hospitaliter*, Lat. *hospitarius*, from *hospes*, a guest), name applied to charitable brotherhoods founded at different periods, and in different countries, for the care of the sick in hospitals. The knights of St John of Jerusalem were a religious brotherhood under whose auspices had been founded a church in Jerusalem. They had their origin in Palestine in the eleventh century, then began to come to the Christian pilgrims visiting the Holy Sepulchre under their care and protection. Their military organisation was perfected in the twelfth century when they successfully defended Jerusalem after the taking of Jerusalem by the Muslims. In the fourteenth century the captured and occupied the island of Rhodes and continued to hold it till 1522 when it was seized by the Turks. After this their influence materially declined. In 1570 they found a shelter in Malta and transferred the gov. of that island to it. It was captured by Napoleon in 1800. On account of their wealth and power they were envied by most of the sovereigns of Europe and in 1806 Henry VIII confiscated their property in England. The vow of devotion to self to the work of a hospitalier was generally added to the ordinary vows of poverty, chastity and obedience commanded by Saint Augustine. The mark of the order was a black robe and cowl, with the cross of eight points on the left breast, consisting of four barbed arrowheads meeting at their points, the well known Maltese cross. In modern times this has been slightly altered and modified in the many institutes or congregations under various names and various rules. At different periods this order has been termed Knights of Rhodes and Knights of Malta. In 1818 the headquarters were fixed at Rome and governed by a council under a grand master. The Hospitaliers owned many strong castles in Syria, like those contemporaries the Templars, and on the oppression of the latter in 1312 the pope transferred most of their possessions to the Hospitaliers. Besides the Knights of St John of Jerusalem there have been twelve or more monastic congregations whose main business was popularly termed Hospitaliers. The two modern associations ascribing their origin to this order are the Brandenburg 'Johanniter-orden' and the Eng. order of the Knights of St John. The former was reorganised in 1853 and the latter in 1827. This society has its headquarters in Clerkenwell, London, and founded the street ambulance system and originated the

**Red Cross Society** It is a purely philanthropic institution, distributing charity to convalescents, etc. See J. Vertot, *Histoire des chevaliers hospitaliers de St. Jean de Jerusalem*, 1726, F. Woodhouse, *Military Religious Orders of the Middle Ages* 1879, J. Delaville de Roulx, *Les Archives, la bibliothèque et le trésor de l'ordre de St. Jean de Malte*, 1883 and *Hospitaliers* 1901, W. Bedford *Malta and the Knights Hospitaliers*, 1891 R. Kelp *Cohen Knights of Malta* 1923 1798 1920 1 1 King *Knights Hospitallers in the Holy Land* 1331

and surgery. Particular classes of patients or patients suffering from infectious disease, such as fever or smallpox, or from diseases of a particular organ, such as eye ear nose and throat, or from maladies like cancer are treated in special H. The following is a list of the main classes of H with examples from London, and elsewhere when stated.

1. **GENERAL HOSPITALS**—(a) *Teaching* St. Bartholomew's H. (founded 1123), St. Thomas's H. (1200) Westminster H. (1711) Guy's H. (1724) St. George's H. (1 3) London Hospital (1710) Charing



AN LECTURE IN PROGRESS IN A HOSPITAL

Ex Lib.

**Hospitals** are institutions for the temporary reception of the sick. The word H. is derived from the Lat. adjective *hospitalis* which belongs to the noun *hospes* (genitive *hospitis*) meaning host or guest. Hotels and hostels have a similar derivation, but like H. these terms have become limited and specialised in their application.

**Classification**—H. are teaching or non-teaching according to whether or not they have attached to them medical schools where students receive technical instruction by properly qualified lecturers and demonstrators. According to another classification they are divided into general and special H. A general H., as its name implies, is designed to treat all kinds of patients and should therefore be equipped with every appliance, both for medicine

and surgery. Particular classes of patients or patients suffering from infectious disease, such as fever or smallpox, or from diseases of a particular organ, such as eye ear nose and throat, or from maladies like cancer are treated in special H. The following is a list of the main classes of H with examples from London, and elsewhere when stated.

1. **SPECIAL HOSPITALS**—(a) *For special classes of persons* (a) *Children's hospitals* H. for Sick Children (Great Ormond St.) (1852), Victoria H. for Children (1866), Alexandra H. for Children with Hip Disease (1867). (b) *Hospitals for women and children* Royal Waterloo H. for Children and Women (1816). (c) *Maternity and lying-in hospitals* City of London Lying-in H. (1750), Queen Charlotte's Lying-in H. (1752). (d) *Hospitals for foreigners* German H. (1845) French H. (1867). 2. *For infectious diseases* (a) *Hospitals*

for fever and diphtheria: London Fever H. (1801), Gore Farm H., Kent (1890). (b) *Small-pox hospitals*: Joyce Green H., Kent (1903). (c) *Hospitals for consumption and diseases of the chest*: Brompton H. (1841), Mount Vernon H. (1860), Royal National H., Isle of Wight (1867). 3. *For diseases of particular organs*: (a) *Dental Hospitals*: Royal Dental H. of London (1858), National Dental H. (b) *Ophthalmic hospitals*: Royal London Ophthalmic H. ('Moordfields') (1801). (c) *Throat, Nose, and Ear Hospitals*: H. for Diseases of the Throat, Ear, and Nose (1863). (d) *Rectum*: St. Mark's H. (1835). 4. *For special maladies*: (a) *Cancer*: Cancer H. (Knee), (1851). (b) *Paralysis and epilepsy*: National H. for the Paralysed and Epileptic (Albany Memorial) (1859). (c) *Skin diseases*: St. John's H. (1863). (d) *Deformities*: Royal National Orthopaedic H. (1839). (e) *Incurables*: Royal H. for Incurables, Putney (1854). (Many great London and provincial Hs. were seriously damaged by Ger. air-raids in 1910-44. See further under LONDON, etc.)

**Administration.**—In the Brit. Isles many Hs. were, until the National Health Act came into force in 1918, largely supported by voluntary contributions, whilst on the Continent and in the United States these institutions are, for the most part, supported and controlled by municipalities. The rate-supported H. in England formerly almost confined to fever and smallpox Hs., a few ambulance stations, and some homes for sick and convalescent children both in the country and at the seaside were augmented in 1927 by the inclusion of the Poor Law Infirmaries ('workhouse' Hs.).

Sir Wm. Fergusson's Commission on Hospital Abuse (1871) made the following recommendations which are here quoted as indicating deficiencies previously existing in our H. system: (1) to improve the administration of poor-law medical relief; (2) to give the poor-law authorities control of all free dispensaries; (3) to check the unrestricted system of free relief; and (4) to pay the medical staff. It is well estab. that a considerable number of people who were able to pay availed themselves of free treatment, which was only intended for the poor, and pay wards are now attached to all large Hs., the patients admitted to them giving fees according to their social status. Since 1909 almoners have been appointed in certain Hs. to decide whether or not applicants for medical assistance are in a position to contribute towards its expense. Since 1948 this work has become unnecessary, since H. treatment is now available to all under the National Health Act, but H. almoners still have important social work to perform.

The rapid growth in the number of Hs. in recent years has emphasised many problems both of finance and administration, and in order to meet them the following recommendations were made by the Medical Consultative Council in 1920 and pub. in their report. They originated with a scheme of combined medical ser-

vices systematised to serve a given area, and are remarkable in the great advance shown as to the place of H. service in the state. The scheme was discussed in 1927 by the Brit. H. Association.

1. **Domiciliary**, including curative and preventive treatment. Staff: doctors, pharmacists, nurses, midwives, health visitors, and other officers of the Health authority.

2. **Primary Health Centres**, including medical, surgical and maternity beds, out-patient clinics, dental clinics, accommodation for equipment needed for treatment and investigation, accommodation for the work of communal services, ambulance service. Staff: general practitioners, visiting consultants and specialists, officers engaged in communal services, visiting dental surgeons, workers in ancillary services.

3. **Secondary Health Centres**, including facilities in curative services in cases requiring highly specialised diagnosis or treatment. Staff: consultants and specialists, officers of communal services, dental surgeons, workers in ancillary services.

4. **Supplementary services**, including facilities for specialised treatment of such conditions as tuberculosis, mental disease, etc. Staff: appropriate specialists and workers in ancillary services.

5. **Teaching H.** and medical schools for cases of unusual difficulty; including facilities for research and post-graduate study. Staff: consultants, teaching and research staff, workers in ancillary services.

6. **Research**: clinical records. 7. **Administration**: The estab. of a single Health authority to supervise local administration whether curative or preventive. Representation of the medical profession on each authority and the estab. of Local Medical Advisory Boards.

A further step forward was indicated by Mr. Neville Chamberlain as Minister of Health in 1927 whereby by special legislation Poor Law Hs. were to be transferred to the municipal authority. This measure had the very important results of removing the stigma of penury from Poor Law patients and allowing all classes to become eligible for institutional benefit.

The prohibitive charges of most private Nursing Homes have led some Hs. to conduct depts. for private patients with fees which are within the means of the middle and lower middle classes.

Besides the pressing need for co-ordination of H. services the financial position recently became increasingly urgent. It was evident that the voluntary system was inadequate to supply the necessary income and many of the voluntary Hs. functioned with restricted accommodation as a result. Local authorities have from time to time given donations and subscriptions under the authority of the Act of 1887, but under the Public Health Act of 1925 they were authorised to give such aid to the extent of a penny rate, while the Hs. themselves have had recourse to charging fees for treatment according to the means of the patient. Such fees, however, could not be legally

claimed and many patients were therefore asked to guarantee payment of costs before admittance, a procedure which was contrary to the object for which the H. operated.

**Voluntary Hospitals under the National Health Service Act, 1946.**—This Act introduces drastic changes in the system of voluntary H., for in effect it nationalises the existing H. and such future H. as may be required. The Act imposes on the minister of health the duty to provide throughout the United Kingdom such H. and specialist and nursing services as may meet all reasonable requirements. The former honorary staff are paid for their services. Special accommodation may be provided for private patients who undertake to pay the prescribed charges, which are designed to cover the whole cost of the accommodation and services provided for the patient at the H., including an appropriate amount in respect of overhead expenses, and the minister is empowered to sue for the amount. Included in the H. and consultant services are all forms of general and specialist H. care and treatment, both in patient and out-patient. Specialist opinions and treatment of all kinds are to be made available at H. (as well of course at clinics, institutions, health centres, etc.). For this national service the minister of health will take over both voluntary and public H. Supplementary services, such as midwifery, maternity and child welfare will be provided through the local authorities. In introducing this Bill, the minister of health, Mr. Aneurin Bevan, admitted that the voluntary H. had done valuable work, but he believed that 'it was repugnant to a civilised community for Hospitals to have to rely on private charity.' The gov. rejected the idea that local authorities should take over the H. and considered that the only thing to do was to create an entirely new H. service, to take over voluntary H. and local gov. H. and to organise them as a single H. service throughout the country, with the nation itself carrying the expenditure. In the early years, the gov. estimated the cost at £152,000,000, the net ann. additional exchequer expenditure being placed at £95,000,000, after allowing for a contribution of £32,000,000 from the National Insurance Fund. Regional Boards to administer the H. and specialist services will be set up in about a score of regions, each large H. or related group of H. having a management committee. Except in the case of voluntary teaching H., endowments will pass to a new fund called 'the Hospital Endowments Fund,' which the minister of health will administer, the cap. value of the fund being apportioned among the regional boards and the income from each portion passing to the board.

The Act provides that where any voluntary H. is designated as a teaching H. or is one of a group so designated, all the H. endowments will be transferred to a Board of Governors constituted in the manner provided in the Act. Endowments given after the passing of the Act (Nov. 6, 1946) but before the appointed

day, upon trusts which provide for the application of the property for some specific object distinct from the general purposes of the H. and for administration as a distinct cap. fund, will not be transferred to the H. Endowments Fund but to the H. Management Committee constituted under the provisions of the Act for the H. or group of H. in which it is comprised.

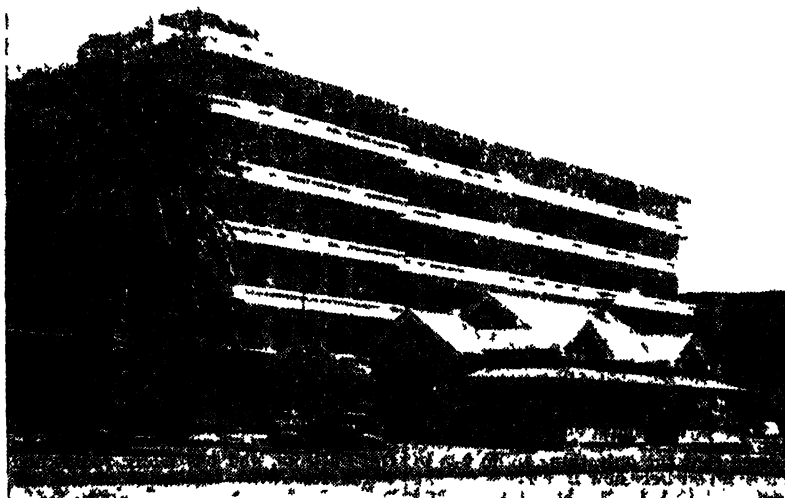
**Architecture.**—A H., viewed as a number of wards, each containing so many beds, with kitchens and other offices within easy reach of wards, is a simple building in conception, and there has been only one really important change of plan in ward erection during the last 200 years. The old method provided windows on one side of the ward only, and is well illustrated by the older blocks of the two London H., Guy's and St. Bartholomew's. In each there is a central entrance and staircase and two long wards on each side, making four in all, on each floor. Thus, each ward is lit by a single row of windows, down its length, and possibly by one or two windows at the end. In the new method in order to get the most light and air, each ward has windows on both sides. The architectural problems of the H. are by no means limited to the building of the wards, and in particular, the H. in a large city should be connected with a univ. or have a medical school attached to it, so that it may take advantage of modern scientific treatment and research. A H. in this case (to borrow the claim of one great institution) is a 'city within a city.' Its day is 24 hrs., it is a bread bakery, a power plant for the manufacture of current, a laundry, a college with lecture theatres, a laboratory for scientific research, a warehouse that stocks cotton wool by the ton, a museum and a gymnasium. It has three great depts.: Medical, Surgical and Out Patients, and has many rooms and wards for X-ray treatment and X-ray research work. Many of these depts. develop as the hospital grows, but in America during the last fifty years the generosity of wealthy philanthropists has sometimes enabled the bold schemes to be carried out as a whole, though the speed with which medical science advances rarely leaves such work unaltered. The new addition to a H. in any great country is probably the best of its kind yet built. The new blocks recently built at St. Bartholomew's in London, for example, as far as human skill makes it possible, combine the advantages of all previous architectural experience. This may be exemplified in the treatment of surgical cases: when new hygienic rules revolutionised the old operation rooms the operation theatre was usually built in any convenient corner as a separate three-room erection and was frequently far from some of the wards, thereby involving for the patient a journey through the open air, but the modern operation suite is planned as part of the surgical block, near the wards and is duplicated (or multiplied) on each floor. This modern unit has no fewer than nine parts, including instrument room, dressing rooms,

sterilising room, operating theatre and anaesthetising room, where, in agreeable surroundings, the feelings of the patient need not be harrowed by the sight of any surgical apparatus before the administration of the anaesthetic.

*History*—It is no exaggeration to say that until the eighteenth century the sick could only be cared for at home or at least in private houses. As late as 1710 St. Thomas's and St. Bartholomew's H. were the only asylums for the sick in London, and in the provinces such institutions

a century ago (Liston amputated a leg under ether at University College H. in 1818). Secondly Lister's introduction of antiseptic methods at Glasgow Royal Infirmary in 1865 paving the way for modern asepsis, thirdly the improvement in the standard of nursing as a result of Florence Nightingale's pioneer efforts at Scutari in the Crimea and later in her nursing school at St. Thomas' H. in London.

It is a mistaken belief that H. were primarily Christian institutions. Egyptian



THE PUBLIC HOSPITAL, GREEN LANE, AUCKLAND, NEW ZEALAND  
This is a fine specimen of the modern architectural conception of a hospital.

were unheard of. But since that day, and especially in the last century, rapid strides have been made, especially in England and Germany, and the H. is regarded as an indispensable factor in all the work of any size, whilst cottage H. are springing up all over the country. Popular education and the realisation of the importance of observing the laws of health wherever people congregate together are responsible for this extraordinary advance. The truth is that the welfare of the community depends on the isolation of the sick is more appreciated every year, and an attempt is made to stamp out tuberculosis by confinement of the infected in sanatoria, the expectation being that in time this scourge will lose its virulence as surely as plague, smallpox, and typhoid fever have already done. These events are of outstanding importance in the history of H. Firstly the discovery of anaesthetics

invalids slept in the shadow of their temples or Saturn 4000 B.C. in the hope that the god would make them well. The temple of Esculapius at Cos was frequented by Greek sufferers and to turn to the E., it is known that the Indian emperor, Asoka, founded a H. at Surat (c. 260 B.C.) and that Haroun al Raschid (d. A.D. 809) built many asylums at Bagdad.

*In U.S.A.*—The H. development in the U.S.A. is probably not only the most extensive of any country in the world, but on the whole, the finest. To begin with, unlike the case of most of the H. which serve the people of London, those in the larger sized towns and cities of the U.S.A. have not for so long depended upon voluntary gifts. Each municipality and many of the counties maintain their own H., whose budget comes from the taxes imposed upon the public. There is thus



ensured to the H. a steady and regular income and the ability to hire a regular trained staff of physicians and nurses and attendants. It is estimated that about 50 per cent of the cos in the U.S.A. have their own H. An even larger percentage of the bigger tns have one or more public H. About 50 per cent of the H in the world are in the U.S.A. The whole tendency in the U.S.A. is away from the old gloomy quarters suggesting disease and death. The smaller tns. have often built H in the pretty colonial style of architecture, and surrounded by parks or gardens to take the patients as much as possible away from the city noises. In the big cities, the tendency is to erect skyscraper H. Thus the Jefferson H. in Philadelphia is seventeen stories high. In Chicago St Luke is nineteen stories high. But probably the biggest H group in the world is that of New York City. It extends from Riverside Drive to Broadway and from 14th Street to 168th Street, the total site covering 22 acres. Here are the Presbyterian H., the College of Physicians and Surgeons of Columbia Univ., the Sloan H. for Women, the New York State Psychiatric Institute and H., the Babies H., the Squire Loring Institute, the Presbyterian H. School of Nursing, the Neurological H. and H., the Markness Patients Pavilion, the School of Oral and Dental Surgery, the Vanderbilt Clinic and the Linnet Institute of Public Health. Somewhere in this vast H. colony with its 1671 beds nearly all the ills to which the flesh and the mind are heir to can be treated. Many of the buildings are sky scrapers, one towering to twenty two stories. Throughout the U.S.A. all the newer H. are being built absolutely fit proof. See Sir H. Bennett, *Hospitals and a History of the World*, 1833. R. W. Chambers, *Hospitals and the State*, 1927. Lummington, *English Public Health Administration*, 1929. A. G. L. Lyes, *English Hospitals*, 1918. A. C. Bachmeyer and G. H. Minin, *The Hospital in Modern Society*, 1913.

**Hospodar** (Russian *Gospodar*) Slavonic term meaning lord or master, the title which is specially applied to the head of a family or the master of a house. It was a title of the ruler of Wallachia and Moldavia from the thirteenth century to 1866, when Rumania became independent. The title was also used by the grand dukes of Lithuania and the kings of Poland down to John Sobieski.

**Host** (Lat. *hostis*, a victim) sacrifice of Christ's body and blood in the Holy Eucharist applied more particularly to the consecrated wafer used in the service of the Mass in the Roman Catholic Church, when it is regarded as an expiatory sacrifice. It is a thin, unleavened, flat wafer of circular form with certain mystic signs impressed upon it, such as the Crucifixion or the Lamb, when used in the Anglican Church it is usually quite plain. In the Rom. Church the H., after being consecrated, is believed to be no longer bread but the real body of Christ, as the wine is His blood (see TRANSUBSTANTIATION). The celebrant breaks the H. into two

pieces, one of which is again broken over the chalice. In the Gk. Church the H. is dipped in the wine before being handed to the communicant. The ceremony of the 'Elevation of the Host' dates from the twelfth century.

**Hoste**, Sir William (1780-1828), Eng. naval officer, b. at Ingoldisthorpe, Norfolk. He saw service in all parts of the Mediterranean, and in 1811 he defeated Dubourdieu in a night off Idesa, and ultimately took Cattaro and Ragusa. He was a brilliant commander, and was a favourite of Nelson. See Lady Harriet Hoste, *Memoirs and Letters of Sir W. Hoste*, 1833.

**Hotchkiss Gun**, gun introduced into use in the Brit. Army during the first World War. It was for some years used by cavalry, park artillery and tanks, being shaped for carrying in a 'bucket.' The gun is fed by a continuous metallic strip, and the method of locking the breech is peculiar to this type of gun, embodying, as it does, the 'interrupted thread' principle. Loading is effected by the use of a thick barrel with few but large, radiating rings. The weight of the H. G. is 11 lb., or without mounting, 27 lb. It automatically fires 400 rounds a min. and is made in light and heavy forms. It was named after its Amer. inventor, Benjamin Hotchkiss (1826-83), an employee in a gun factory during the Amer. Civil War.

**Hotchpot.** The object of the H. clause, which is inserted by conveyancers in all marriage settlements, is to ensure that none of the younger children of the marriage who have been advanced a sum out of the portions' fund during their father's lifetime shall be able to claim a further share at his death in the sum remaining for his share among all the younger children without first bringing into account the sum or sums advanced. Power is usually expressly given in the settlement to the tenant for life under the 'settled Land Act' to declare on making an advance, or appointment, as it is termed, that the share appointed shall not be brought into H. which power is of use where it is the will of the tenant for life to divide the fund equally subject to a first charge in favour of a particular child. Where a share of an estate is by the terms of a will to be divided between the children of the testator and a stranger, advancements do not have to be brought into H. so as to benefit the stranger.

**Hotel** (F. *hôte*, O. I. *hostel*, Lat. *hospitale*) superior kind of inn. It provides lodging and refreshment for travellers generally, and may be set up without a licence, unless the proprietor sells excisable liquors, in that case a licence must be sought. An innkeeper is bound to provide for any one who applies to him, and may not refuse either lodging or refreshment, unless the applicant is tainted by disease or drunk, but, on the other hand, a traveller cannot select what rooms he chooses, and if he will not accept the accommodation offered him, the proprietor need not oblige him at all. Then, again, a proprietor can retain any of the property of his guest if he fails to pay his account

But the innkeeper is liable for the loss of his visitors' property within the H. to the value of £30, unless it can be proved that his guest was at fault. The word H. has different meanings. In France it originally meant the mansion of a distinguished person, then the residence of a maire, and later a place where people were lodged and fed at a fixed price. The modern Fr. word is still used for the house of a rich man, or for a public building, e.g. Hôtel de Ville is the town hall, and Hôtel de Dieu is the name given to the prin. hospital in any Fr. town, the Hôtel des Invalides in Paris is

tributed largely to raising the standard of Hs. by allowing its enamel sign to be displayed outside those of which it fully approves, and also by inserting the names of such Hs. in the ann. A.A. Handbook. The Brit. Hs. and Restaurants Association, 11 Southampton Row, W.C. 1 publishes annually to its members who number over 4000 an official Guide to the establishments. The A.A. also affixes its sign to many Hs. on the Continent, where progress in baths and sanitation have been made in late years, especially in Th. Hs., where up to date sanitary appliances were



John S. Lee

#### THE BRITISH RAILWAYS HOTEL AT MILL AMBLY, LANCASHIRE

The hotel is constructed of a light ring white concrete polished like marble and relieved by the blue tones in the architraves of the windows. There is blue green glazing on the undersides of the projecting ledges, the hoods of the balconies and the ceilings of the passages. The architect Oliver Hill designed also the interior decoration fittings and furniture thus ensuring a continuity of theme through it.

a famous military hospital and soldiers' home, founded in 1670, which contains the tomb of Napoleon. The modern H. dates from the formation of railways and is a palatial dwelling in comparison with the old-fashioned inn. The modern Hs. contain telegraph, post, and telephone offices, as well as reception, reading, smoking, and writing rooms, drawing rooms, lounges, comfortable bedrooms, and sitting rooms. Somewhat restrictive conditions still impede the development of Hs. in Great Britain, though their importance as earners of foreign exchange, through overseas tourists, is becoming increasingly recognised by the gov. and the country in general. With this in mind, everything possible is being done by managements to maintain and improve their standards of comfort and service. In America a fixed charge used to be made for board and lodging, but now as in Europe H. proprietors generally make a charge for the accommodation and an additional one for each meal taken in the H. The Automobile Association has con-

tributed largely to raising the standard of Hs. by allowing its enamel sign to be displayed outside those of which it fully approves, and also by inserting the names of such Hs. in the ann. A.A. Handbook. The Brit. Hs. and Restaurants Association, 11 Southampton Row, W.C. 1 publishes annually to its members who number over 4000 an official Guide to the establishments. The A.A. also affixes its sign to many Hs. on the Continent, where progress in baths and sanitation have been made in late years, especially in Th. Hs., where up to date sanitary appliances were

imported from England after the First World War. In general Swiss, Dutch, German, Scandinavian and most Brit. Hs. can be relied upon for scrupulous cleanliness. In London the once famous H. Cecil in the Strand which used to be a rendezvous of nobility and of wealthy Americans was dismantled to make room for new offices, a consequence, possibly, of the gradual concentration of social life in the West End. The Savoy H. still continues to entertain a distinguished clientele. In April 1931 the palatial Dorchester H. was opened in Park Lane under the management of Sir Francis Towle. The Berkeley H. in Piccadilly London modernised in 1930 makes a feature of being completely noise proof and air conditioned. The Queen's H., Leeds completed in 1931, has a completely regulated ventilating system, claiming to be noise proof. In America the Fifth Avenue H. of New York, built in 1853 was famed as a resort for eminent European visitors, but magnificent new Hs. have now been built in the leading streets of New York. Many of them are

of sky-scraper size, the New Yorker being forty-four stories high. Its development has proceeded at a great pace throughout the U.S.A., there being no important city which does not now possess one or more vast houses ten or more stories in height. In the latest and finest the custom is for each bedroom to have its own bath-room. See R. B. Ludy, *Historic Hotels of the World*, 1927.

**Hotham**, William, first Lord (1736-1813), Eng. naval officer. He entered the navy in 1718, in 1751 sailed to N. America, and ultimately served in the W. Indies. He took part in the defence of Sandy Hook and Rhode Is. under Lord Howe. His actions against the Fr. off Genoa and off Livorno (1795) were adversely criticised by Nelson in his letters.

**Hotham**, Mount (alt. 6100 ft.), one of the highest peaks in the Barry range, Victoria, S. Australia, about 135 m. E.N.E. of Melbourne.

**Hothouse** describes a glazed and heated structure used in horticulture for growing plants out of season or in colder climates by allowing close control of temp., ventilation and light to be exercised. Glazing extends to roof and all sides, and may be, with equal efficiency, of clear or semi-obscured hortic. glass. If a tenant's structure, it must be unattached to ground, permanent walls or built on, capable of being dismantled and portable, but it may rest on a loose brick, not cemented, foundation. The three common types are: Span roof, ranging from the single span garden greenhouse to the many-spanned commercial glasshouse, erected with ridge running N. and S. to admit maximum sunlight; three-quarter span roof, preferably built adjoining a S.W. or S. wall; and the single span lean-to roof, similarly situated. The smallest economic size for equable heating is probably 12 ft. x 8 ft. Site must be sunny, on well-drained soil, and foundations draught-proof. Heating equipment depends upon the minimum winter temp. to be maintained. Tropical or semi-tropical plants and vegetables require much higher temps. than temperate flowers such as primulas. A house in which the night temp. in winter does not fall below 40° F. in the severest weather is termed a cool greenhouse. It is suitable for the raising of such plants as anemone, begonia, calceolaria, carnations, celosia, chrysanthemum, cyclamen, daisy, fuchsia, geranium, gladiolus, geranium, petunia, rhodanthus, schizanthus, streptocarpus, sweet pea, verbena, zinnia, etc., from seed; chrysanthemum, celosia, cyclamen, fuchsia, hydrangea, oleander, pelargonium, plum-bago, salvia, and solanum from cuttings; and most bulb species from corms or offsets. A warm or stove house is one in which a minimum winter temp. of 60° F. is maintained, in which many flowers can be forced, vegetables grown out of season, and plants raised from seed or cuttings for later planting out of doors. The range of tender flowers that can be grown include achimenes, allamanda, anemone, anthurium, bougainvillea, bouvardia, caladium, clerodendron, croton, dipladenia,

eucharis, exacum, gardenia, gesnera, hippeastrum, hoyo, impatiens, ixora, jacobinia, jasmine, justica, lapageria, nepenthes, polkaetia, stephanotis, thunbergia, and torenia. Choice of heating apparatus depends also on the size of house. Small cool houses may be heated with special fuelless oilstoves, gas or electrical apparatus. Gas and electrical heating offer the advantage of thermostatic control, but are seldom practical at an economic cost for the maintenance of forcing temps. The most economic heating equipment consists of hot water or steam pipes extending along the sides, etc., of the house, together with a furnace or slow-combustion stove. This may be oil or gas-fired, but solid fuel, coke or anthracite, is most economical today. Techniques of soil-warming by electric cable or wire may be utilised with advantage in most houses. The aim of ventilation is to change the air without draughts. Roof ventilators are essential. Stage ventilation at the side of a house is rarely needed in winter, but helpful in summer. Sub-stage ventilators admitting air on to heating pipes are good for winter use. A constant water supply is essential in Hs., and may be arranged by gutters and pipes draining into a lidded cistern sunk to floor level inside the structure. Modern houses of steel, aluminium or alloy construction are less costly to maintain than wooden, but care should be taken to see that facilities for supporting plants by training wires or strings are provided. Whether grown in pots, boxes, or borders, H.-grown plants require well-balanced, fertile soils. Making up of soil composts for seed-growing and potting is simplified by use of formulae developed by John Innes Hort. Institution, Merton Park, London, S.W. 20. Freedom from soil-borne plant parasites, fungal or insect, is assured by soil sterilisation, preferably by heat, or the use of a 2 per cent solution of formaldehyde. Proper regulation of temp., ventilation and watering assure maintenance of buoyant atmosphere. Watering should be done early in the day to ensure plant foliage being dry when the house is closed at night. Insect control has been revolutionised by the development of new smoke generators. D.D.T. smoke controls adult white-fly, tomato moth caterpillars, woodlice, and capsids. Azobenzene smokes eliminate red spider. Against aphides, thrips, and scale, nicotine is most effective. Mildews, rust mould and other fungus diseases require the use of sulphur or copper fungicides. Plants vary in their tolerance of smoke or fumigating treatments, and this should be ascertained beforehand. See F. J. Fletcher, *Glass-houses and Propagation of Plants*, 1948.

**Hotin**, see KHOTIN.

**Hot Lake**, dist. in the N. is. of New Zealand, stretching S.W. from the bay of Plenty, and containing hot springs, geysers, and active volcanoes.

**Hotman**, François (1524-90), Fr. publicist and jurist, of Silesian origin, b. at Paris, son of a counsellor of the parliament of Paris. Studied law and began to practise at the Paris bar, but thereafter spent his life in lecturing and writing. Was at

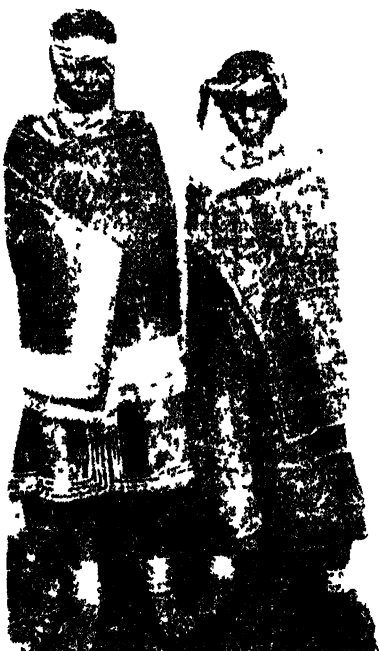
first lecturer in Roman law at Paris Univ. Having embraced Calvinism he went to Geneva and thence to Lausanne, where he was prof. of belles-lettres. From 1550 for some years he lectured at Strasbourg and then attached himself to Antony of Navarre, being entrusted with missions from the Huguenots to German princes. He succeeded Jacques de Cujas (q.v.) at Bourges, but the civil war drove him into flight, to Orleans whence he was sent to Blois to arrange the peace of 1564. He suffered greatly during the Huguenot persecutions and again sought refuge, this time at Sancerre, where he wrote his *Consolation*, a work drawn from the Bible and St. Augustine. After the massacre of St. Bartholomew he fled to Geneva and turned his back on France forever, having written his famous Lat. political treatise, the *Franco Gallia* (1573, trans. 1574). At Geneva he was appointed prof. of Roman law; but he never found peace and eventually, in 1589, he fled to Basel, where he died and was buried in the cathedral there. His prin. work, the *Franco Gallia*, doubtless aimed at Charles IX., was never popular with his co-religionists and was also much censured by the Catholics. In it he represents the institutions that the Huguenot party demanded as being those which for long governed France, and which alone could retrieve her prosperity. According to H., these ideal institutions could be traced to the history of Gaul and the old Frankish monarchy and to the later federation of free states formed by the peoples of Gaul in Caesar's time, under a General Assembly of elected deputies—a federation which, after the conquest of Gaul by the Romans, was replaced by an elective monarchy, beginning with Childeric in which the king could be deposed by the States-General composed of nobles, magistrates, merchants and artisans, the clergy forming no order and exercising no power. This work breathed the true spirit of research and of Huguenot independence, and the sensation it caused has been compared to that produced by the *Contrat Social* of Rousseau. It was a man of unquestionable piety and lofty ideas on religion, and his frequent flights, which might seem to savour of cowardice, were really due to fears for his wife and family. His other works included the *11th Tribonian* (1567) a treatise to show that the law could not be founded on Justinian, a *Treatise on the Eucharist* (1571), *A Life of Coligny* (1577) and many works on law and politics.

Hot Springs, city and the principal seat of Garland Co., Arkansas, U.S.A. In the Ozark Hills, 15 m W.S.W. of Little Rock. It is situated in a narrow valley and contains about forty-four mineral springs which are famous as cures for chronic diseases, such as rheumatism, gout, and neuralgia. Their temp. ranges from 76° to 160° F., and the daily output is about 1,000,000 gallons. They are all contained in a reservation which has been held since 1903 by the U.S.A. gov., which maintains here a naval and military hospital and a free bath-house. Lead and silver are found here, also flint, oilstone.

There are smelters and saw and planing mills, also ostrich and alligator farms. Here was held the United Nations Conference on Food and Agriculture, in May, 1943, as a result of which an interim commission was estab., which formulated the constitution of the Food and Agriculture Organization (I.A.O.) of the United Nations (see further under FOOD AND AGRICULTURE ORGANIZATION). Pop. 22,000.

**Hotspur**, name applied to Henry Percy, son of the first earl of Northumberland. In the reign of Henry IV. II and his father gained the great victory of Homildon Hill (1402). He joined with Owen Glendower against the king, but was killed in the battle of Shrewsbury (1403).

**Hottentot**, native race of S. Africa so called probably from their hairy or unmetallizable character. The Hottentots are supposed to represent a mixture of



HOTTENTOTS

E.N.A.

stocks in which the Bushman and Hamite elements predominate. They are now numerically important and are confined for the most part to S.W. Africa N. of the Orange R. The H. race includes the Khoi Khoi, or full blood Hs., and the Bushmen. Of the former the Nama, proper are the most typical branch of

the H race, and can be distinguished by their yellowish brown complexion, oblique brown eyes, prominent cheek bones, pointed chin, broad flat nose, and black woolly hair. They are essentially a pastoral people owning long horned cattle and fat tailed sheep, whereas the Bushmen live exclusively by the chase, and their national garb is the 'kaross,' or sheep-skin, worn with the woolly side out in summer and reversed in winter. They have a particular form of clan organisation and follow a cult of sacred fire which is thought to be a Hamitic tract. Their huts are frail structures of matting which can be carried from one camping ground to another. They are sluggish, indolent people and the majority of them lead a nomadic life. Most of the tribes have been converted by Protestant missionaries but under the outward form of Christianity many old superstitions survive, and the 'Houta Lohu' or Great Spirit, is still alternately rewarded with offerings or overwhelmed with imprecations according as he shows himself propitious or hostile to the community. His devotees speak the Khoisan languages. Though the Hottentot has Hamitic features, the closest relationship appears to be with the Bushman though that with the latter is at a remote distance. The numbers using these languages are few (there are less than 20,000 surviving Bushmen) although the Nama variety of the H language is spoken by 30,000 people. It is progressively being replaced by Afrikaans. The H languages, of which only Nama and Korana are now spoken have been the subject of much research especially by German students. H speech is highly developed possessing very delicately graduated series of vowels and diphthongs unlike the Indo-Chinese languages by which different meanings are imparted to the same word. There is also an accusative case indicated by endings in the singular dual and plural, and gender is marked by distinct termination for the masculine, feminine and neuter of all three numbers. The H pop was regarded from the beginning of the nineteenth century mainly as a source of labour to replace the labour lost on the abolition of the slave trade. A few tribes retained their tribal organisation for some time, but the Hs were gradually absorbed as wage earners into the economy created by the spread of European farming and they retained neither a separate territory nor a distinct existence as a community. See F. A. Walker *A History of South Africa* 1928, J. Schapera *The Khoisan Peoples of South Africa* 1930. Lord Hailey, *An African Survey* 1935.

**Hottentots Bred**, see DIOSCORIDEA

**Hottentots Holland** mountainous dist. of Cape Prov. S. Africa which is famous for its scenery. Jonkershoek, among the mts, is noted for its old picturesque farm, where the government hatchery is.

**Houbaken, Jacob** (1698-1780), Dutch engraver, son of Arnold H. (1660-1719) & at Dordrecht. He particularly excelled in portraits and it has been said that no one has ever equalled him in the manner

of imitating the flesh and hair by means of the graver. He pub. in London (1743-52) *Heads of Illustrious Persons of Great Britain*, with lives by Dr Birch.

**Houdeng-Allmeries and Houdeng-Goegnies**, two adjoining tms in Hainaut, Belgium 11 m E of Mons. There are important coal mines. The chief industries are iron, glass and brickworks. In the neighbourhood is the first large hydraulic lift for river vessels, constructed to counteract the difference of level of two arms of the Canal du Centre. Pop. 7,600 and 4,200 respectively.

**Houdin, Robert** (1805-71), see under CONJURING

**Houdon, Jean Antoine** (1741-1828) French sculptor b. at Versailles. In 1761 he won the Prix de Rome, and went to Italy. He remained ten years, and executed the life-size figure of St Bruno, of which Pope Clement XIV said that it would stick to the rules of its order (enforced since). On his return to France he was received into the Academy, became a member in 1776. In 1781 he visited America to execute a monument of Washington; indeed it was in portraiture that he was especially successful. Some of his most famous busts are those of Turbot, Rousseau, Lafayette, Mirabeau, Napoleon, Mlle Arnould, and Moliere. See H. Dicks *Houdon's Leben und Werke*, 1887, G. G. G. *Houdon, Le Sculpteur*, J. A. Houdon *et son époque*, 1918-19, and monographs by L. Kézu 1930 and L. Maillard, 1931.

**Houghton** tn in Houghton co., Michigan U.S.A. on the S. side of Portage Lake, about 65 m NW of Marquette. It is the centre of the great copper producing dist. of Keweenaw. There is a ship canal to Lake Superior and a steamer connection. Michigan College of Mining and Technology is situated here. Besides copper mining, lumbering and agric. are also carried on. Pop. 477.

**Houghton, Marquis of**, see CRFWE, EARL OF.

**Houghton, Richard Monckton Milnes**, 1st Baron (1807-55) was an example of the best type of man about town. At Cambridge he moved in the literary set and became intimate with Thackeray, Tennyson and Brookfield, whose friendships endured through life. Later in life he joined the Philobiblon Society, and was always in the van of such movements as 'chambers' institutes, franchise, and the reform of the copyright law. A minor poet of some distinction an excellent after dinner speaker gifted with an incisive wit, he was very popular in society, and he entertained largely both at Fryton and at his London house. He ed. Keats's *Life and Letters* (1818) and ed. a collection of his poems in 1843 and again in 1876. He pub. an interesting vol. of essays, *Monographs* (1873). See Sir I. Wemyss-Fairlie, *The Life, Letters and Friendships of Lord Houghton*, 1890. J. Pope Hennessy, *Monckton Milnes: The Years of Promise*, 1919.

**Houghton-le-Spring**, tn 6 m. N.E. of Durham, England. There are collieries and iron-works. The anct. church here contains the tomb of Bernard Gilpin, the

'Apostle of the North,' who was rector here, and also founded the grammar school. Pop. 28,100.

Hougoumont, vil. near Waterloo, in Belgium, and the scene of most of the critical fighting in the Battle of Waterloo. Together with its grounds it was in the occupation of the Brit. troops when Napoleon opened battle. Defended by the Eng. guards, it remained untaken throughout the battle.

Hougue, La, see HOGUE.

Houlton, tn. in Maine, U.S.A., in the co. of Aroostook, about 98 m. from Bangor. Lumbering and farming are carried on. It is a port of entry. Pop. 7000.

Houma, co. seat of Terrebonne par. Louisiana, U.S.A., about 50 m. S.W. of New Orleans. There are sugar, rice, and cotton plantations. Natural gas supplies the tn. Pop. 9000.

Hound, term applied to dogs of the chase which hunt by scent alone, such as bloodhounds, foxhounds, staghounds, basset hounds, beagles, and harriers. Deerhounds and greyhounds, which run by sight alone, are not, strictly speaking, Hs.

Hound, par. and vil., Hampshire, England, on Southampton Water,  $\frac{1}{2}$  m. from Netley station. It contains an Early Eng. church and the Royal Military Hospital. Pop. 3714.

Hound's-tongue, name given to various species of the boraginaceous genus *Cynoglossum*. The plants grow in tropical and temperate lands, and two grow wild in Britain. Of these the better-known is *C. officinale*, the common H., which grows on waste ground, and was formerly used in medicine. It grows to a height of 2 ft., has downy leaves, and bears red flowers.

Hounslow, tn. in Middlesex, which stands at the junction of the two great W. of England roads from Bath and Exeter, and is about 14 m. from London and 24 m. from Brentford. H. Heath, W. of the tn. was the site of Rom. and Brit. camps, and was also a favourite resort of highwaymen. It is now used as an exercise ground for troops. From 1918 it was the continental air port for London till this was transferred to Croydon in 1920. The large cavalry barracks built in 1793 is the chief military depot for Middlesex. A priory of friars of the Holy Trinity was founded at H. in 1296, and the chapel was used as a church until 1830, after which the present church of the Holy Trinity was built. H. is now part of Heston—Isleworth. Pop. 23,600.

Hour, twenty-fourth part of a day. In most countries the Hs. are counted from midnight, and two twelves are reckoned, but in certain parts of Italy twenty-four Hs. are counted, beginning with sunset, so that noon and midnight occur at different times each day. The 24-H. mode of reckoning is used in the Brit. Army. *Whitaker's Almanack*, etc., e.g. 12.5 A.M. is reckoned as 0005 H., 11.50 P.M. as 2350 Hs. Each H. is divided into 60 min., and each min. into 60 secs. Many nations e.g. Gks., Jews, and Babylonians, were not accustomed to divide their day and night

into equal parts, but into unequal or planetary Hs., and double Hs. of 120 min. were employed by the Jap. and Chinese.

Hour-angle, angle made by any H.-circle with the meridian of the observer. For example, when the sundial at a certain spot registers ten o'clock in the morning, and the sun is therefore two hrs. distant from the meridian, the hr.-circle makes an angle of 30° with the meridian.

Hour-circle, in astronomy, any great circle drawn through the poles. The fixed stars complete their apparent revolution round the earth in twenty-four hrs. of sidereal time, passing through 360° in twenty-four hrs., i.e. in 15° one hr. If, therefore, two observers are 15° of long. from each other, one has any fixed star one hour of sidereal time later in his meridian than the other. Meridians in dialing are known as Hs.

Hour-glass, instrument for measuring intervals of time which consists of two glass bulbs joined by a narrow neck. One of the bulbs is almost filled with sand or mercury, which passes through the narrow aperture to the other bulb in the space of an hr. if an H., or of a min. if a min.-glass. This device was frequently employed in churches during the sixteenth and seventeenth centuries, and in the Eng. House of Commons, as a preliminary to a div., a two-min. sand-glass is still turned.

Houri, name for a beautiful damsel endowed with perpetual youth, whose companion-ship in Paradise is the reward of devout Moslems after death. The word comes from the Persian *hūrī*; Arabian *haurā*, a black-eyed virgin.

Hours and Wages, see LABOUR, HOURS AND WAGES OF.

Housatonic, riv. (length 150 m.), New England, U.S.A., rises in Berkshire co., Massachusetts, and flows generally S. through Connecticut, enters Long Is. Sound 1 m. E. of Bridgeport.

House, Edward Mandell (1858-1938), friend and adviser of President Woodrow Wilson, was b. at Houston, Texas, U.S.A. He was the son of an Englishman who emigrated to Texas when that ter. was still part of Mexico, and who took a large part in fighting Mexico. He was educated at Cornell Univ., and then returned to his native state, where he made a comfortable fortune from his plantations and other business ventures. Although he never ran for office himself, he took a keen interest in the politics of Texas, and was largely instrumental in the nomination and election of a number of its governors and senators. H. was a progressive Democrat. When Woodrow Wilson was prominently mentioned for the Democratic nomination for the Presidency in 1912, H. paid a visit to the then governor of New Jersey. The two men found that they thought alike on public questions and policies, and a friendship was begun which was to last without a break until the closing months of Wilson's life. When Wilson was triumphantly nominated and elected, H. could have had almost any position that the President could bestow, but he declined. H. went to Europe for the President. He had interviews with

most of the rulers and leading statesmen of the Old World—a practice followed by President Roosevelt in 1940 and 1941. In 1915 H. again went to Europe to be the eyes and ears of the President, and, particularly, to study the possibility of Wilson acting as mediator between the warring nations. When America entered the war in 1917, H. once more went to Europe as chief of the mission to study means of fulfilling Allied war needs. He then became a member of the Allied War Council, and when the

before 1700 B.C. Hs., of two or three storeys with stairs to the upper rooms; the ground floor rooms obtained light only through the doors, the upper floors were lit by windows. The rooms were rectangular, the roofs flat. This is the S. type of H. In Greece, in very early times, the H. was of circular form. It passed through many changes to a rectangular formation in which the circular form is retained as an apse. As rooms were increased in width, central columns were



STOKESAY CASTLE, SHROPSHIRE

John H. Stone

Powers met at Versailles to draft the Peace Treaty, Wilson named H. as one of the Amer. peace commissioners. As such he took a considerable part in drafting the League of Nations covenant. One of the most fascinating books on Europe and America just before, during and after the war is *The Intimate Papers of Colonel House*, ed. by Prof. C. Seymour, 1926-28. See A. D. Howden Smith, *The Real Colonel House*, 1918.

House, term used for a building erected for habitation. It therefore includes dwellings of any size, from a single-room building to a palace. Hs. set the architectural type of the epoch. The early Egyptians lived mostly out of doors, and their dwellings were of wood or crude brick. Their smallest Hs. consisted of single rooms. Their larger Hs. had outer and inner courts surrounded by porticoes, halls, and chambers for the family, guests and servants. The ground plans only remain. At Cnossus the Cretans built,

added. The roofs were pitched. The accommodation consisted of a porch, a megaron with a hearth, and sometimes a further sleeping chamber. The Hs. in Greece were of the N. type. The later dwellings of the Gks. were plain and unpretentious; the rooms faced inwards and round an internal courtyard, the Hs. were of one story, and the light was admitted through the doorways. They were frequently surrounded on the outer walls by shops. In Rome, the accommodation was similar to that of Hs. in Greece, the rooms being round an interior court with a peristyle; light was admitted through the doorways, and the ceilings and roofs were of wood. The buildings were one storey in height to withstand earthquakes. This type was called *domus*. There were also *insulae*, or tenements of sev. floors, similar in plan on each floor, built of concrete with brick facings. The rooms were barrel vaulted and the walls plastered. The floors were covered with

mosaic. The rooms were lit by windows. They had staircases to the upper floors from the street, as at SS. Giovanni e Paolo, Rome. There were, further, villas as that of Hadrian at Tivoli, and palaces as that of Diocletian at Rome. The accommodation was semi-public and official. The Romans built Hs. in England, but these, being of the S type, appear to have had no influence upon the Eng. H.

Between the Rom. occupation and the Norman Conquest the buildings in England were of wood. With few exceptions there was no permanent building until fifty years after the Conquest. The castles of the Conqueror were of wood surrounded by earthworks. In the twelfth century stone superseded wood, and the stone H. probably embodied the same accommodation as its wooden fore-runners. The keep was the domestic part of the castle, and the important room of the keep was the hall. The Hs. other than castles were still of wood. The keep was nearly always square, as in the case of the White Tower of the Tower of London, and Rochester Castle (1130). The walls were very thick, the rooms being badly lighted by a small window to each floor. There are two rooms to each floor in Rochester Castle, and there is a chapel in the thickness of the walls, and a circular staircase communicates with each floor. The windows are small and unglazed; a wall fireplace heats the hall, the smoke being taken through the wall. In some cases the floors of the keep were of wood, in others stone-vaulted. The rooms were on top of each other, basement, hall, and attic. The kitchen was detached. Where defence was not the paramount consideration, the rooms were placed side by side upon the ground. The hall was still the prin. apartment of the H. and was used for living, eating and sleeping. This type, the fortified manor H., survived, and developed into the modern H. The keep type continued in such buildings as the Peel tower of the N. and Lattersall Castle, Lincolnshire, and elsewhere until the mid-fifteenth century. The hall gave the name to the H. At one end of the hall was the kitchen, at the other the solar or master's room. The solar grew into the suite of rooms for the family, the kitchen into the domestic suite. In the manor type of H., the fire was in the centre of the hall, nearer the end used by the master of the H., the smoke was let out through louvres in the roof. To increase the width of the hall, a row of columns was placed on one side or on both. Glass was sometimes used in the windows in the mid-thirteenth century, but not generally until the fifteenth century. In some cases the kitchen was detached from the H. Towards the end of the thirteenth century decoration and comfort were considered.

Stoke New Castle, in Shropshire, built in 1340, is to-day a well-preserved thirteenth century castle, defended by castellated tower, moat, and gatehouse over the moat. In common with sev. other old houses, it was styled a 'castle' because the tops of the walls and towers were

fitted with battlements—in other words, castellated—where as it was really only a fortified manor house. It is considered the finest example in England of an early hall. Well preserved S. Castle is defended by moat, gatehouse, and tower. Its great hall was built in 1210 and the tower 50 years later, when the owner obtained his licence to crenellate, or fortify his home.

Haddon Hall is to-day similar in plan to what it was in the fourteenth century. It is grouped round an upper and lower courtyard, the hall divides the two courts. The building is of the fortified type, there are few windows; and it is lit from the inner courts. The rooms communicate directly with one another, but privacy is assured by the use of screens. There are some rooms on the first floor over the kitchen. The planning is wasteful. The windows are small. In the Hs. were built side by side within the walls until the available space was utilised. By the close of the fifteenth century, the need for fortification had passed. Elizabethan plans of Hs. were more economical of material and their planning was more convenient. They were designed to produce effects (though there is some evidence of unnecessary towers earlier). Towards the end of the sixteenth century the builders considered the symmetry of their elevations. During this century the greatest changes took place. The period coincided with the Renaissance, which commenced in this country, in the reign of Henry VIII., with the dissolution of the monasteries, and the transfer of wealth from the Church to the Court. On the elevation the cornice and pilaster appear, and within the plan more privacy is provided by the use of corridors, as at Hengrave Hall, 1538. The subjects of Queen Elizabeth died with each other in building large estates. The H type plan was evolved as fitting in more air than the courtyard type. Windows became larger, chimneys and fireplaces were more highly developed.

In the seventeenth century the design of Hs. became personal. The taste for the H. fashion was gratified by Inigo Jones, Wren, and, later, Vanbrugh. In the country districts the old traditional type of plan and building continued. The design of Hs. now followed two lines. In the academic type, the position and use of the hall were slowly altered from that of a living-room to that of an entrance. The ground floor was used for the day rooms, the upper floor for the sleeping rooms. The staircase became more central. Such windows were first employed. The chimneys collected into stacks, and there were dormers as part of the roof and not, as formerly, as part of the walls. The Civil War disturbed the development of building. Architecture became fashionable through books on the subject. Castle Howard is the culmination of this period. It was built for display, and the outside wings are similar, though the rooms behind them are put to different uses.

In the eighteenth century, the idea of show and stateliness was still further realised. Rules of proportion produced



beautiful Hs. which were highly inconvenient. The rooms were too lofty for comfort, though pleasing in appearance. The kitchen balanced the stables, but both were separated from the H by long colonnades. There was some protest against this tendency, but usually the dictates of Andrea Palladio triumphed, and Hs lost comfort and gained stateliness. Some of the smaller Hs were more practically built. The In H was developed on a narrow frontage facing on to squares and streets, repeating the same plan side by side in blocks and groups. With the nineteenth century, the growth of building increased with the pop and their migration from the country to the towns and cities. The people had to be housed near their work. Little Hs in terraces

ated with sculpture. Baths and gymnasia are provided. In England, the modification of the building regulations to allow of artificial ventilation of bathrooms will affect the future planning of flats and Hs. On the Continent there are Hs. built to satisfy the phrase 'a machine to live in' as the definition of a H. This tendency has had some influence on recent housing planning.

From the middle of the nineteenth century detached country Hs followed in the design of their elevations the successive preferences for past periods native and foreign styles. The plan has grown more convenient and orderly, attention being given to economy of management, and convenience of the arrangement of the kitchen, scullery, offices, and the



German State Railways

A BLOCK OF FLATS IN GERMANY, REPRESENTATIVE OF A TYPE WIDELY ADOPTED

and courts comprising one room upstairs and one room down built back to back with windows to one side only. Common earth closet and pump. Large villas were built round Regent's Park, and blocks of large residences in upper Regent Street. In the country, the spectacular Palladian H was built side by side with a revival of the forgotten Gothic. In some instances it was combined with a classical plan. In others as at Fonthill, it was a reversion to medieval ideas, but with an attempt to imitate the features and ornament were incorporated in new Hs.

In 1831, Lord Shaftesbury called attention to the condition of overcrowding in London. In some localities there were more than eighty Hs to the acre, with families in each room. Legislation was enacted providing for the erection of lodging-Hs. subsidized out of the poor rates. Other Acts followed. They did not produce the desired effect. In 1890 the London C. Council began to deal with the problem. They built flats, the more recent of which are five floors high, three floors of flats and the fourth and fifth floors two storey tenements. Continental countries have adopted flats. In Stockholm they are sometimes twelve storeys high. In Amsterdam six to eight storeys. In Germany and Austria the courts about the blocks of flats are decorated

with a room. Sanitary arrangements have been improved, and water provided. Since the First World War detached Hs have become smaller. Motor ming has declined and the motor has taken house holders out of doors.

1-8-4—The Amer. H dates from the earliest colonial period. Seventeenth century work is medieval in character, picturesque, and emphasizes the importance of structure. The buildings are wooden framed and derived from English sources the small H being wooden examples of the cottages. In the eighteenth century they became formal in plan, based upon the palladian style copied and adapted from books by English writers. This type and period are called 'Georgian Colonial'. The early Republican H show the influence. Oval rooms are found, the communication within the H is carefully studied, the bedrooms being entered through separate doors. In New York there are Hs of the eighteenth century with Dutch characteristics, notably covered verandas. In the S. Sp. types prevail, the walls are thick, the buildings of one storey round open patios and the chimneys outside. In the N. the plans are more compact, the chimneys inside the H. With the opening of the nineteenth century, romanticism influenced the design of the Amer. H. In the twentieth century the ideas found in all these periods

and areas have been exploited and developed. In general, modern Amer. H. plans have the living-room and the dining-room connected, the dining-room being reached from the kitchen and living-room only. The dining-room is usually small. The bedrooms are often without fireplaces. In many Hs. the living-room contains the only fireplace, the Hs. being heated artificially. There is a tendency to place the living-room at the rear, garage and services towards the street. In New York, apartment Hs. of thirty-one stories, 380 ft. high, have been built. Indeed, with the difficulties of obtaining servants, the building of big modern apartment Hs. has been increased in Amer. cities.

**Interior Decoration, General.**—Electric lighting has led to considerable experiment in the interior decoration of Hs. Diffused, concealed, reflected, and strip lighting have all been used. Colour has been given to light by tinted glass screens and neon tubing. Walls are sometimes considered as texture in order to break the even distribution of the light. Glass is used in ceilings; polished steel for floors. Mural painting has been revived. Colour is used for psychological ends. Glass in various colours and as mirrors is being largely employed. The room and its furnishing are being considered as an entity. Emotional and spectacular effects, rendered possible from the use of colour and form, are being successfully designed. The various rooms are being decorated to accord with the moods appropriate to their use. The walls, ceilings, windows and doors have all been treated with the same colour or shades as tending to homogeneity. The bathroom is being considered—cheerfulness being stimulated by coloured walls and fittings of various material—porcelain, ceramic, mosaic and paint. Glass and stainless steel have been tried as handrails and for various fittings. Built-in fittings are used in most of the rooms of the H. in order to economise space and simplify decoration by giving the room that greater unity which follows from the employment of the architect of the H. as the designer of its furniture. Mouldings have been reduced, and surfaces are less broken. Pictures are selected with greater care—for colour and design—their setting being considered, or designed for them. There is less ornament in Hs. and less provision for their display. Ornaments are selected for emotional effect. The psychologist and the scientist have been studied by the decorator in order to stimulate health and pleasure. *See also* BUILDING; FLORAL DECORATION; HALL; HOUSING; MURAL DECORATION; WALL-PAPER. *See* J. A. Gotch, *The English Home from Charles I to George IV.*, 1919; Sir R. Blomfield, *A Short History of Renaissance Architecture in England*, 1923; A. Richardson and H. Eberlein, *The Smaller English House of the Later Renaissance*, 1925; W. Anderson and R. Spiers, *The Architecture of Ancient Rome*, 1927; *The Architecture of Ancient Greece*, 1937; T. Small and C. Woodbridge, *Houses of the Wren and Early Georgian*

*Periods*, 1928; J. A. Gotch, *The Growth of the English House*, 1928; D. Harbron, *Amphion, or the Nineteenth Century*, 1930; N. Lloyd, *A History of the English House*, 1931; F. Yorke and F. Glibberd, *The Modern Flat*, 1937; F. Yorke, *The Modern House in England*, 1937; R. McGrath, *Twentieth Century Houses*, 1940; Victoria Sackville West, *English Country Houses*, 1945; R. Dutton, *The English Interior*, 1949.

**Houseboat**, riv. boat which is fitted with every convenience for habitation, i.e. has living, sleeping, and cooking apartments. In England these boats are found mainly on the R. Thames, and are only used as temporary houses by people making riv. excursions; but in the E. countries Hs., which very much resemble floating huts, are common on all the large rivers, and are used as permanent residences; indeed, many of the Chinese, Burmese, etc., spend their whole lives on these floating craft.

**Housebreaking**, *see under* BURGLARY.

**Housecraft**. Term which includes not only housewifery (*q.v.*) and cookery, but which has wider implications, the scientific practice of H. being known as 'domestic science', and including the choice of a house, its furnishing and equipment, cleaning and care, and embracing such subjects as cookery, dietetics, laundry work, and home nursing. Teachers' training courses in H. may be taken at the Battersea Polytechnic; Berridge House, Hamstead (now under the National Societies Training College of Domestic Subjects); the National Training College of Domestic Subjects, Buckingham Palace Road, and King's College of Household and Social Science (Univ. of London), Campden Hill. In the prov., and abroad also, many schools and colleges provide full courses, and degrees are awarded in domestic science. Shorter courses of instruction in housecraft are given at various polytechnics and schools of Domestic Science.

The choice of a site for a house should be considered in relationship to the soil, aspect, contour of the land, drainage facilities, and provision of water, gas and electricity; the plan of the house should be prepared with full regard to the facilities offered by the site. Choice of furnishings, largely a matter of individual taste, should, nevertheless, have regard to a general colour scheme, walls, floor covering, curtains, and style of furniture having a relationship to each other. The kitchen is the workshop of the house and should receive special consideration, as the smooth running of the entire estab. depends largely upon its efficiency. Labour-saving devices should be incorporated as far as possible, not only in the kitchen, but in the other rooms of the house. These may include: built-in cupboards and wardrobes; rounded corners to facilitate cleaning; washable or tiled walls in kitchens and bathrooms; plain doors to cupboards and rooms; hot and cold running water in the bedrooms; kitchen cabinets for the storage of dry goods and a hatchway unit between din-

ing-room and kitchen; airing cupboards for linen; stainless steel sink units with draining trays, cupboards, etc.; stainless metal taps; bakelite or plastic electric fittings; enamelled gas and electric cooking stoves; electric vacuum cleaners and floor polishers; electric washing and washing-up machines. Information and advice on good household equipment can be obtained from The Good Housekeeping Institute, 28-30, Grosvenor Gardens, London, S.W. 1. See E. W. Gregory, *The Art and Craft of Home-Making*, 192; E. E. Jardine, *Housecraft*, 1928; Pauline Griffin, *Happy is the Bride*, 1946, also Blackie's Domestic Science Handbooks including *Simple Lessons on Health and Habits*, *Simple Lessons on Household Management*, and *The Chemistry of Housecraft*.

**House-duty, Inhabited**, tax imposed on inhabited dwelling-houses, of the ann. value of upwards of £20 in England, Wales and Scotland. Its incidence was on the legal occupier and not on the owner. There were numerous exemptions, such as houses belonging to the royal family, hospitals, almshouses, school buildings, trade and business houses and others. The duty ceased to be chargeable after 1923-24 (Finance Act 1924, Sect. 20).

**House-fly, Flesh-fly**, or *Musca domestica*, name given to a species of dipterous insects belonging to the family Muscidae.



1 *White and Jones*  
THE PROBOSCIS OF A HOUSE FLY

The two jointed proboscis is shown, with the palps and the lips (labella) palmeated by feeding tubes.

These flies are widely distributed and very numerous, especially in summer. The eggs are deposited on dung-heaps or similar places, and the larvæ feed on their surroundings until pupation, which takes place in a few days' time; at the end of a fortnight they are fully-developed winged insects. The chief characteristics are the sucking proboscis and the bristle-feathered antennæ. Hs. are considered frequently to be agents in the spreading of disease;

they pass the winter chiefly in the pupal state.

**Household, Royal.** The R. H. probably had its origin in the *comitatus* described by Tacitus which consisted of *comites* or companions who were the personal attendants of the Teutonic chieftain. In England before the Conquest the *comites* had been replaced by thegn, the chief of whom were the staller or horse thegn and the bowthegn, while in Normandy a similar arrangement had been estab. and each duke had his seneschal or steward, his chamberlain, and his constable. After the Conquest this ducal household was reproduced in the R. H. of England. The hist. of the R. H., however, is difficult to trace, as very few records concerning it are forthcoming. The *Black Book of the Erchequer* enumerates its offices in Henry II's reign, but gives no account of their functions; and the *Collection of Ordinances and Regulations for the Government of the Royal Household, made in Divers Reigns from Edward III to King William and Queen Mary* (printed 1790), contains very scanty information. The *Black Book of the Household* and the *Statutes of Eltham* do, indeed, give some details about the court arrangements during the fifteenth and sixteenth centuries, and Chamberlayne's *Present State of England* contains a catalogue of the officials at the court of Queen Anne, but no connected list is forthcoming. Be this as it may, the existing R. H. is essentially the same as that under the Tudors or Plantagenets, and consists of three main depts.: the lord steward's dept. (Board of Green Cloth), the lord chamberlain's Dept., and the master of the horse's Dept., which can perhaps claim the greatest antiquity. At the head of the first is the lord steward, who must always be a member of the gov. and a peer, and it is interesting to note that he still possesses a criminal jurisdiction such as was originally inherent in every head of a dept. Indeed, all jurisdiction relating to homicide in respect of the R. H. resides in him, and under his mandate alone can inquests be held or criminals be indicted and tried. Under him are the treasurer, the comptroller, the master of the household, the offices of the almonry, and the paymaster of the Household. At the head of the second is the lord chamberlain, who must also be a member of the gov. and a peer, and under him are the vice chamberlain, the master of the Ceremonies, whose duty it is to enforce the observance of the etiquette of the court, the gentleman usher of the Black Rod, the prin. usher of the kingdom, the lords and grooms-in-waiting, who attend on the king in turn for about three weeks at a time, the captain of the Corps of Gentlemen at-Arms, the captain of the king's bodyguard, the Yeomen of the Guard, the comptroller and examiner of accounts, the dean and the sub-dean of the Chapels Royal, the pages, the master of the king's music, the poet laureate, the royal physicians and surgeons, chaplains, painters, librarians, and musicians.

The Queen Consort's Household is also

in this dept and comprises a lord Chamberlain, a treasurer, equerry, and various ladies. These include the mistress of the robes, who attends the queen at all State functions and is the only lady of the Court who comes into office with the gov., seven ladies of the bedchamber, who must be peeresses, seven women of the bedchamber who appear only at Court functions and eight maids of honour, who as a rule are daughters or granddaughters of peers, and who in any case have the right to prefix 'honourable' to their names even if not entitled to do so by birth. The third dept has at its head the master of the Horse who also is a member of the gov. He has charge of all matters connected with the horses and hounds of the king and under him are the cross-hunters who practically manage the royal stables and stud, the equerries who are always officers of the armed forces and attend the king in turn like the lords and groom in waiting, and the pages of honour, youths who wait on the king at state ceremonies. Besides the three depts mentioned there is also the Privy Purse Dept. which consists of the king's 'personal' staff and includes the keeper of the privy purse and the privy secretary. The civil list provides for the maintenance of the P. H. £134,000 being granted for salary and £172,800 for expenses besides grants of £110,000 for their majesties' privy purses, £20,000 for works, £13,200 for royal bounty and £8000 unappropriated.

**Household Troops** are those whose special duty it is to guard the reigning monarch and their troops. There are two regiments of cavalry and five of infantry, the cavalry being the Royal Horse Guards and the Life Guards, and the infantry, the Grenadier, Coldstream, Scots Irish and Welsh Guards. See also GUARDS.

**House**, for many centuries the English name for the English rose regarded as a Victorian cult until the late 19th century. (cf. Shakespeare's unheeded, unnamed.)

**House-leek**, popular name given to various species of *Sempervivum*, a genus of Crassulaceae. The plants are succulent, have star-shaped flowers, and flourish on the mts. of Europe, Asia, and Africa. Several species occur in Britain as hardy plants, and their cultivation requires little trouble as they thrive in the poorest soil. *S. tetrum* the common H., is frequently planted on the roofs and walls of cottages to keep the tiles together. The leaves are arranged in rosettes, are fleshy and in colour are a vivid green; the flowers are purple and vegetative multiplication takes place by offsets.

In many parts of England and especially in Huntingdonshire, the H. is planted on the roof of houses, in the widespread belief that if it is on the roof the house will never catch fire.

**Housemaid's Knee**, see KNEE.

**House of Commons and House of Lords**, see PARLIAMENT.

**Houses of Parliament**, see PARLIAMENT, HOUSES OF.

**Housewifery**, term defining activity of the wife in the home, and not confined to routine housework, but embracing the

care of the fabric and contents of a house, and the skill necessary to convert the house into a home—a happy home and a contented household being an important contribution, at all times, to the national life. The surroundings of a house are important. It should, if possible, stand in a productive garden. The rooms of the house should be so arranged as to admit the maximum of sun and air to those frequently used. Modern practice is for the house to face S.E. or S.W. and not due S. The kitchen, scullery, and larder should face N. or N.E. Bedrooms can face S.E., S. or S.W. The aim of the modern housewife should be to attain satisfactory results within a reasonable time and with the minimum amount of physical labour, this can be achieved by acquiring a knowledge of, and using modern labour-saving equipment as far as means permit (see also HOUSEWORK).

(Good furniture should be regarded as an essential, but over-furnishing should be avoided; there should be ample space in which to work and move about. Personal requirements vary, but a good rule is to buy only the essentials if possible from a well-planned range of unit furniture which can be put together like unit block-helms, thus allowing for additional pieces as time and occasion may demand. Furniture may be classified as utility—carefully and well designed and of pleasing proportions but of varying standards of decoration; or as decorative and more individual, and made of varying periods, and generally of good quality as far as material and workmanship is concerned, but very often at a large price for the modern house or flat. Antiques— invariably well made, but often unsuitable for a modern house and always expensive.

**DAILY CLEANING**—A certain amount of cleaning each day is a necessity, though attention should not be made at a thorough cleaning of the entire house each day. A satisfactory result can be obtained in a reasonable time, and efforts should be made to attain a happy medium between perfect work and planning an exhaustive daily routine. The cleaning of a house may more efficiently be accomplished if the following order is observed: bedrooms (bath and lavatory if on the first floor), landing, stairs, hall, living room, kitchen and back premises. In brief, the work is from the top of the house down wards. Daily cleaning ensures that nothing is overlooked (to become very dirty and thus demand excessive time, materials and labour on its cleaning) and it gives an opportunity of keeping all polished surfaces—floors, mirrors, windows, etc.—bright and shining, and generally to 'tidy up' all the rooms. Household routine should always be so planned that this daily cleaning is finished before the start of the general work of the day. As varying houses present their own problems, and even rooms of the same type demand special requirements, only general principles of daily cleaning which should be adapted to meet individual requirements can be considered here.

**General order of daily work**—The room should be aired and the cleaning apparatus ready to hand. A beginning should be made by cleaning the fireplace and relaying the fire. If a bedroom is being cleaned, re-making of the bed should be given first attention, followed by the cleaning of any fitted hand basin, and afterwards the sweeping of the floor (or sweeper or vacuum cleaner over the carpet) and shaking any small mats. The main work done: the furniture, bed, rug, door and window frames etc. may be dusted and all bright surfaces polished with a polishing cloth and a mop rubbed over any polished surrounds on the floor. Lastly, the room should be generally tidied. When all the household cleaning is completed the cleaning equipment and materials should be carefully packed away. Beds should be opened by removing all the bedclothes and placing them over two chairs, arching the mattress so that it may air. The mattress should be turned daily, from side to side and from head to foot alternately. The bolster and pillows should be shaken up. Bedclothes should be smoothed and creases and the sheets tucked tightly under the mattress. Where it is possible for two people to make the beds the work is halved and made much easier.

**To clean a fireplace**—The hearth rug should first be rolled up and the carpet turned back while the floor in front of the hearth should be covered with newspapers, and the fender and fire irons moved to one side where the soot from the back of the grate is swept down and the cinders removed. It is advisable to save these cinders for the next fire, but the ashes should be completely removed, preferably using for the purpose an old bucket lined with newspaper, which facilitates disposal in the dustbin. The fire is laid by lightly crumpling newspaper on top of which dry sticks are placed crosswise, the cinders being placed at the back of the fireplace. Small pieces of coal at the front and larger pieces at either side. Finally, any bright surfaces should be polished, and the tiles washed before the replacement of the fire irons, hearth rug and carpet and the refilling of the coal box.

**To clean a fitted hand basin and surround**—The basin should be half filled with warm water in which the tooth glass can be washed and then dried. The glass shelf and its contents dusted, and the surround to the basin, and the soap wells wiped. The basin should now be emptied, rinsed and dried, and the taps rubbed up with a dry duster.

**To clean the lavatory and bathroom**—It is advisable first to sweep or mop over the floor, when the lavatory should be flushed and a little disinfectant sprinkled. The bath should be wiped over with a damp cloth, sprinkled with a little paraffin, and afterwards rinsed. Any stains upon the bath may be removed by rubbing soap on the cloth and applying to the stains, while it will be found that vinegar will remove any blue stains. Care is advisable in the use of abrasive substances when cleaning the bath, as these may tend to spoil the surface enamel. To complete the work,

all ledges should be dusted and the window left open while if the weather permits, the towels and bath mats should be dried in the open air.

**WEEKLY CLEANING**—A more thorough cleaning should be given to each part of the house, if possible at weekly intervals. The order of work should, generally, follow that advised for daily cleaning, except that, after cleaning and relaying the fire the walls should be swept, paint work on doors, window sills and mantel piece, etc., should be washed and the furniture and floor polished. Dust sheets should cover furniture during the weekly cleaning unless an electric cleaner is being used. After use they should be carefully removed, folded with the dusty side inside, taken outside and shaken and packed away. Clocks should be moved as little as possible and covered with a cloth while cleaning is in progress. Where there are large numbers of books they should be dusted while remaining on the shelves. The case dusted and the whole covered with a dust sheet.

**SPRING AND SPECIAL CLEANINGS**—Spring cleaning should be finished before the weather begins, but after it is possible to do without fire and when the weather permits, furniture hangings, carpets may be put out into the garden for airing and cleaning. The housewife should plan carefully as much as can be done each day without disorganising the usual work of the house, avoiding weekends and ensuring that the extra work is not interfere with the preparation of proper meals for members of the family and herself. A decision should first be made regarding any necessary decorations and arrangements made for this work to be done, and it may be found that the chimneys require sweeping. Before the cleaning begins, the housewife should be sure that there is a good supply of cleaning materials and that all the equipment is in good order, and a beginning may be conveniently made by turning out and thoroughly cleaning all cupboards, drawers, chests, etc., and by cleaning and storing away winter clothes, curtains, extra blankets, bedcovers, etc. If this connection it will be found that protection against roths is advisable. Special work to be done during the spring cleaning includes the cleaning and if necessary polishing of all pictures, ornaments, walls, paintwork, furniture, carpets and bedsteads.

**Order of Spring cleaning**—Work should begin at the top of the house, cleaning first those rooms which are least used. Landings, passages, hall, and staircase should be cleaned after the rooms, and the kitchen and back premises last of all. It is best to finish one room before beginning the next, and to keep the doors of rooms already cleaned closed.

**Special cleanings**—A sick room should be kept scrupulously clean, and the fewer its contents the better (see **NURSING—Home Nursing**). The fireplace should first be cleaned, and the coal-box quietly refilled. Before sweeping the floor all furniture should be drawn out from the

walls in order to remove any dust that has collected. Damp tea-leaves or sawdust should be sprinkled over the surface before sweeping is begun, as this prevents the dust from rising. If the floor is carpet-covered, a carpet-sweeper should be used daily, and furniture, ledges, dusted with a slightly damp cloth, finishing with a dry cloth. Fresh water should be given daily to flowers in the sick-room, and their removal at night.

**Preparation for chimney-sweeping.**—The sweep will expect to be told the exact date and time he is to attend, and to be informed of the number of chimneys which will require his attention. Unless the sweep is using the new vacuum (or a similar) method, by which chimneys may be swept without disturbing the room, the following preparations should be made: furniture should be covered with dust-sheets or newspapers; curtains and the hearth-rug removed from the room; the carpet should be turned back from the fireplace and the floor covered with newspaper; the floor-space immediately near the fireplace should be well covered to allow the sweep space on which to rest his tools; the windows and door should be kept shut while sweeping is in progress.

**HOUSEHOLD CLEANING EQUIPMENT.**—Brooms and brushes, whether made from horse-hair, fibre, bass, bristle, or one of the various substitutes, should be washed when necessary, (a) soft brushes in warm soapy water, rinsed in clean warm water and dried in the open air; (b) stiff brushes in cold salt water, allowing 2 tablespoonfuls of salt to a bucket of water, rinsed in cold salted water. Care should be taken not to lean on a brush or allow the bristles to bend or break, and to remove all dust and fluff, after use, by shaking. Brooms and brushes should be hung up in a cupboard when not in use. Carpet sweepers operate by means of a revolving brush between two dustpans. These dustpans should be emptied daily, and all pieces of fluff, cotton, etc., may then be removed; it is possible for the entire instrument to be cleaned by the housewife herself, and this may be done occasionally by unscrewing the handle, removing the furniture guard, and taking out the revolving brush. The component parts may then be thoroughly cleaned and reassembled. Electric cleaners are an important part of the household cleaning equipment, especially where electricity is cheap. The best-known types are the outside bag type, also known as the broom-handle type, such as the Hoover, etc., and the enclosed bag type, such as the Electrolux, etc.

Kneeling mats are made from a variety of different materials, and can be bought or improvised from a pad of old soft material. Step ladders long enough to allow the housewife to reach easily up to the top of cupboards, etc., are extremely useful. There are many kinds, but the safety-ladder type should always be bought. Racks for brooms and brushes are extremely useful as they enable brooms, brushes, and other cleaning equipment to be tidily stored. They can either be bought or improvised from odd materials.

**KITCHEN EQUIPMENT AND CLEANING.**—Glass cooking utensils should be steeped in cold water if they have been used for milky or floury foods, and in hot water if used for greasy foods. They should be washed with hot soapy water, soda being added if the dishes are very greasy, and if very dirty they may be scoured with steel wool, a saucepan brush, or scourer, afterwards being rinsed and dried with a net cloth. Saucepans should be cleaned according to the surface material—they may be obtained in various materials ranging from aluminium to enamel. Only the outside and lids of saucepans should be polished, the pans being filled with water immediately after use, hot water being used to remove greasy food and cold water to remove milky or floury foods. Saucepans should be cleaned as soon after use as possible, dried thoroughly, and kept upside down in an airy place. Enamel ware should be washed with warm soapy water, a fine cleaning powder being used if necessary, after which the articles should be rinsed and thoroughly dried. Care should be taken to avoid knocking the surface of enamel-ware articles, as this causes the enamel to crack, exposing the foundation metal, which rusts on exposure to moisture and air. Earthenware casseroles should be steeped in hot water if greasy, or in cold water if milky; they should then be washed in hot soapy water, using a saucepan brush, or scourer, and the outside may be cleaned with a fine cleaning powder. The use of soda should be avoided, as this is apt to remove the glaze from the inner lining.

Baking and roasting tins should be steeped in hot soapy soda water, afterwards being washed in a further solution of hot soapy soda water. Stains may be removed by the use of a cleaning powder, after which the tins should be rinsed and dried in a warm place. Cake tins should be rubbed over whilst still warm with absorbent paper, but washing should be avoided unless this becomes absolutely necessary, when the tins may be treated as for baking and roasting tins. Frying pans should first be emptied by pouring the remaining fat into a small jar and reserving for future use, after which the pan should be wiped with clean absorbent paper; washing with soap and water should be avoided, as this spoils the surface and tends to make food stick to the pan. Mincing machines after use should be taken apart so that all food may be removed with a fork, scraping if necessary, and afterwards washed in hot soapy water. After rinsing and drying with a net cloth the drying process may be advantageously completed by placing the mincer in a cool oven or on the plate rack.

China jugs or bowls which have contained milky or floury foods should be rinsed with cold water, then filled with cold water and stood aside to soak; any pieces should be scraped off plates, which should then be washed in hot soapy water, using a cotton mop; it is advisable to begin washing the cleanest things, finishing with the greasy china. After rinsing in hot water, china may be allowed to dry



sible with a cloth and then either hung in the open air, or left to dry indoors with the doors and windows open to create a draught. Matting requires cleaning daily by sweeping, and may periodically be gently scrubbed with cold salted water on both sides, afterwards being rinsed and dried in the open air.

**WALL COVERINGS** may be enamel, paint, tiles, wallpaper, or distemper. Tiles may be cleaned with warm soapy water: wallpaper may be cleaned by removing the surface dust with a brush covered with a clean cloth, or with the vacuum cleaner, and especially dirty marks can be removed by the careful use of India rubber; varnished or washable surfaces should be cleaned by removing the surface dust and washing the most soiled parts with tepid water and borax, allowing 1 tablespoonful of borax to one quart of water; distemper, or colour wash, may be cleaned with warm soapy water.

**WOOD.**—A number of different woods may be used in a house in the flooring, furniture, fixtures, and domestic appliances. Wooden surfaces may be left smooth and plain, as in the case with pastry and draining boards, or they may be covered with some protective coating, such as paint, enamel, or stain, which may afterwards be varnished. Plain wooden surfaces are easily cleaned by scrubbing with hot soapy water, care being taken to scrub with the grain to avoid roughening the wood: the wood may be carefully scraped with the grain, using an old knife, if particles adhere after scrubbing; rinse in cold water, which helps to keep the wood a good colour, dry with a net cloth and finish drying in the open air if possible. Stains such as those made by meat, vegetables, parsley, etc., may be scrubbed off with plain cold water, or, if obdurate, they may be sprinkled with kitchen salt and then scrubbed; oil and grease usually yield to hot soapy water. Protected wooden surfaces should be dusted daily and rubbed hard with the duster to maintain the polish and occasionally washed with warm soapy water, using a soft nail brush for carved surfaces. Polished or varnished surfaces should be finished with furniture cream or polish. Paint on woodwork exposed to the outer air should not be washed with soapy water, as this tends to blister the paint, use being made instead of a mixture of paraffin and water, allowing 1 tablespoonful of paraffin to half a bucket of warm water.

**FURNITURE.**—All furniture should be dusted or brushed daily, loose covers being straightened and well tucked in and cushions puffed up. Cane furniture may be cleaned by washing and rinsing with cold salt water, allowing 1 tablespoonful of salt to 1 quart of water, and drying thoroughly in the open air. Wicker furniture should be washed with warm soapy water, using a soft cloth, and if very dirty a soft nail brush may be used. After rinsing and drying the furniture may be polished with a liquid furniture polish. Drying in front of the fire should be avoided, as this causes the furniture to crack. Leather and imitation leather cloth may be periodically

cleaned by washing with warm soapy water, using a soft cloth. After rinsing and drying it should be polished with furniture polish or cream.

**GLASS.**—Flower glasses and bowls should be washed with warm soapy water, using a soft nail brush if necessary; stains may be removed by placing a tablespoonful of salt in each vase, covering with vinegar and water, and allowing the vase to soak overnight, then washing in the usual way. Windows and mirrors should first be dusted, then rubbed with a pad of lightly-crushed newspaper, or tissue paper. Periodically the paint-work of the window frame should be cleaned, and then the window. Methylated spirit, or one of the commercial window-cleaning liquids may be used instead of water to clean windows and mirrors. It is unwise to wash windows in frosty weather, or while the sun is shining directly on the window.

**METALS.**—A number of metals are usually used in the ordinary house. Aluminium, chromium plate, electroplate, galvanised iron, lead, monel metal, pewter, silver, stainless steel, etc. Steel knives, tin and zinc, can be washed with hot soapy water, using a soft cloth, stains being removed by the use of a little fine cleaning powder. Steel wool can be used for removing stains from aluminium and pewter, and powdered bathbrick for removing stains from galvanised iron. Chromium plate, monel metal and stainless steel may be polished by rubbing with a dry duster; aluminium and tin by rubbing with dry whitening and polishing with a duster; electroplate and silver by rubbing with whitening or polishing with a commercial plate preparation; galvanised iron, lead and zinc by rubbing with powdered bath-brick and paraffin, finishing with a dry duster; pewter as for solid silver; steel by rubbing thoroughly with dry steel wool or emerypaper and finishing with a soft dry cloth.

**BEDS AND BEDDING.**—Bedsteads should be made as plainly and simply as possible to allow for easy cleaning; a bedstead consists of a head board and a footboard, held upright by means of iron side bars, on which rests the wire mattress and the upholstered mattress. The design of modern bedsteads is changing and the head and footboards are becoming lower and smaller; in some cases the footboard is omitted altogether. If both head and footboards are omitted, the bed then becomes a divan bed. Mattresses consist of wire links of different shapes, mounted in a metal frame; the upholstered mattress is soft and warm and covers the wire mattress; there are several types of filling for upholstered mattresses—horsehair, wool, flock, fibre, etc. There are also several varieties of mattress such as the spring mattress, which, as its name suggests, contains springs in addition to the filling; the box mattress, containing spiral springs and filling, etc. A wire mattress, unless made of stainless metal, should always be covered to prevent rust and stains being transferred to the upholstered mattress—covers can be made from clean sack, hessian, or any piece of thick cotton



material. An upholstered mattress should always be kept clean by having a loose washable cotton cover slipped over it.

**Pillows**—The standard size is 20 in. by 30 in. and this should be remembered when buying pillow cases. The filling may be of down or feathers, and the outer covering is made from a cotton material known as pillow ticking, a finer variety of mattress ticking. Bolsters are always filled with feathers and the outer covering is the same as for pillows.

**HOUSEHOLD LINEN**—In every house a special place should be set apart for the safe keeping of the household linen. The linen cupboard should be dry and airy but not hot, as heat is liable to cause the linen to take on a yellow tinge. Linen should not be stored if it has been starched. The shelves of the linen cupboard should be covered with clean white paper or with material such as old sheeting. A written list (inventors) should be kept of all the linen and if this is kept up to date it will assist in arranging replacements. Household linen can be marked by using marking ink or by the use of woven names. Because of the heavy initial cost of household linen it is essential that it should be kept in perfect condition for as long as possible. This can be done by careful mending, careful ironing and careful use. When too old to serve its original purpose, and mending no longer possible, it should be cut low and used for other purposes.

**How to LAUNDRY**—The aim of the housewife undertaking home laundering should be to render garments clean, clean fresh and crisp, without in any way damaging the fabrics. In preparing for the work she should ensure that there are sufficient washing materials at hand to collect all soiled clothes and heat the water in the boiler. Divide the clothes according to their material—woollens, white cottons and most colours, loss of colours, silks, table linen and rough cloth, busby, oven clothes, etc.

**Method**—Wash the white and fast coloured cottons using hot water and soap. Rub the soiled parts well with the soap, use a rubbing board but brush only the very dirty parts of the material. Rinse well and boil in a copper of water to which grated soap has been added until a good lather appears. While the clothes are boiling wash the silks, then the woollens, beginning with those that are cleanest, in warm copy water. Keep the garments under the water whilst kneading and squeezing. Do not rub as this causes breakage of the fibres. Place any very dirty parts flat on the hand and rub the soapy lather across them (as rubbing removes the scales from the woolen fibres and makes the fabric harsh), rinse in two waters of approximately the same temp. as the washing water. It is unwise to wring woollens and silks through the hands—they should be squeezed to remove the bulk of the water, and then put through the wringer. Peg on the line by the upper part of the garment. Soak dusters, etc., in a pail of soapy water, leaving them in this while the other washing is done.

Remove the cottons from the copper and rinse in cold water. Squeeze a blue bag in a bowl of water until the resultant liquid is just blue in the hollow of the hand, and dip in the cottons which do not need starching. Put through the wringer and hang out to dry. Wash the loose coloured cottons in the same manner as for woollens, then wash the dusters which have been soaking and any other rough cloths which may have been put with them in the pail of soapy water. When in doubt regarding any material wash as for woollens.

**Starching**—Starch stiffens clothes and has the advantage of preserving their cleanliness. Mix 2 tablespoonfuls of starch in a bowl with 4 tablespoonfuls of cold water, pour on boiling water, stirring all the time until the mixture thickens and takes on a greyish tinge, to this add three times as much cold water as the mixture. Starch the clothes by dipping them out (as in the case of pillow cases) and then the open ends in the starch. Stir a convenient order for starching is (1) tray cloth, (2) table cloths, (3) table napkins, (4) cotton dresses, (5) trousers and collars.

**Finishing and Ironing**—Only the starched clothes should require dampening. Dip in with warm water and wring out. Cut the cork or cut the strips away from the original cork or from the cloth to be ironed and sprinkle the water all over them. Fold the articles and allow them to lie flat for a few minutes. Roll up the remainder of the laundry in a few days. Prepare the ironing table by putting over it a thick piece of flannel, then tying on an ironing cloth. The hot board should be used for dresses and blouses. For cottons, use a hot iron first testing on a bit of paper. A hot iron is one which is used for an old iron. It should be kept in a string to be pressed on. The woollens should be pressed on a hot iron with a warm iron. All double cloth and type should be ironed on both sides, begin ironing with the bottom half of a garment. Iron the waistcoat, any trousers with a hot iron. The ironing board should be ironed on the top half of the garment and the collar, if any. Embroidery should be ironed on the reverse side, using a press.

The equipment required for home laundering need only be of the simplest kind, essentials being a press (heated by a white electricity or gas or a portable gas which may be heated by a gas or even a primus stove), soft bristle brushes, good fatty soap, a rubbing board, a hot iron (electric, gas, or the flat iron) and must be heated. Other equipment is, however, on the market to assist the housewife, chief of which is the electric washing machine, a valuable labour saving device where the washing for a large family has to be undertaken by the housewife, there are also commercial soap powders, bleaching powders, etc., all of which have their particular uses, and are sold with full instructions supplied by the manufacturers, whose instructions should be closely followed.

**MINOR ELECTRICAL FAULTS.**—One of the commonest electrical faults in the house is the failure of a lamp to light when the switch is turned on. The bulb should first be tried in another socket to ascertain whether it is worn out or still operating; if the fault is not that of the bulb, the lampholder may need adjustment; or the flex at the plug and ceiling may be faulty. Fuses can be tested by switching on lights in the same circuit; if these are working the fault lies between the fuse box and the lamp; care should be taken to switch off all current before inspecting any electrical equipment—flex, lampholder, etc. If a fuse has blown, switch off at the main, pull out the fuse holders in turn from their fixing clips until one carrying an incomplete (melted) wire, or only ends, is found. A dark stain caused by the combustion will probably be noted. The terminals of the holder should then be unscrewed to release the ends, and a length of new fuse wire inserted loosely connecting the two ends. It is important that fuse wire of the correct thickness be used. A supply of fuse wire both for lighting and power circuits should always be kept at hand.

**Electric bells.**—Common faults in battery-operated bell systems usually arise from the batteries themselves. Leclanché type or wet cells consisting of a zinc element and a porous pot immersed in a solution of sal-ammoniac, should have the level of the liquid, if low, replenished with a solution consisting of 1 ozs. sal-ammoniac to 2 pints of clean water. Zincs which are nearly eaten through should be replaced. Replace dry cell batteries from time to time before they are quite worn out. (See also ELECTRIC BELLS and ALARMS.)

See also COOKERY; DIET; DRESS-MAKING; DRY-CLEANING; FURNITURE POLISH; FOOD AND FEEDING; HEALTH; HEATING; HYGIENE; NURSING; SANITATION; PAINTING AND DECORATING.

See E. Henney and J. Byett, *Modern Home Laundrywork*, 1934; A. Margaret Kaye, *A Student's Handbook of Housewifery*, 1910, and *A Shorter Course of Housewifery*, 1946; Pauline Griffin, *Happy is the Bride*, 1946; Kathleen E. Fletcher, *Housewifery*, 1948; J. G. Williams, *Home Laundering*, 1949.

**Housing.** Less than fifty years ago the Statute Book contained no legislative enactment (beyond one or two ineffective Acts to enable local authorities to acquire labourers' lodging-houses or artisans' dwellings) even purporting to deal at all comprehensively with the H. problem. That problem is the consequence of the intense industrialisation of England consequent on the development of machinery. Practically all the great manufacturing towns, each with its squalid alleys and slums, sprang up in the course of the last century. The Factory Acts (see FACTORY LEGISLATION) interfered with a one-sided freedom of contract by imposing on the employer the necessity of making the environment of factory workers less dangerous and less insanitary. The H. of the Working Classes Acts, the first of which under that title was passed in 1890, in-

cluded in that environment the home itself. H. legislation up to 1890 was more or less ineffective. Then came the Act of 1890, which was passed after the report of the Royal Commission on the H. of the Working Classes of 1884, to consolidate the Artisans' and Labourers' Dwellings Improvements Acts, 1875 to 1885, and other Acts. Compared with its predecessors, this Act was an ambitious piece of legislation, and many of its provisions for dealing with unhealthy areas and houses unfit for human habitation were repeated in the consolidating Act of 1925. Burns's H. and Tn. Planning Act, 1909, was also an ambitious piece of legislation, and sought to improve the health of the people by raising the character of the house and home, and by extended inspection, supervision, and direction of central control to help local authorities to do more than they could at this time. The Act of 1890, together with the Acts of 1903, 1909, and amending Acts up to 1909, contained powers sufficiently wide to enable effective action to be taken by local authorities who were prepared to act in spite of inherent difficulties. The consolidating legislation resulted in two chief measures from which local authorities derive their powers. These two Acts were the H. Act of 1925 and the Tn. Planning Act of the same year (as to the latter see under TOWN PLANNING). An Act passed in 1930 made further provision with respect to the clearance or improvement of unhealthy areas, and, in 1935, legislation was passed to prevent overcrowding. Practically the whole of the provisions of the H. Acts of 1925, 1930, and 1935 were repealed and re-enacted, with slight modifications, in the codifying H. Act of 1936.

After the end of the war, Dr. Addison, as the first minister of health in the new Coalition Cabinet, inaugurated a new scheme under the H. (Additional Powers) Act, 1919 (to provide dwellings for returning soldiers—'homes for heroes'). The country was divided into eleven areas under H. Commissioners, and local authorities were encouraged to follow the lead. In brief, the scheme turned on an undertaking by the Exchequer to make good losses incurred under the Act, the authorities being responsible to the extent of a penny rate. As a result 211,000 houses were erected suitable for occupation by the working classes. Unfortunately an indirect result of the scheme was the rapid rise in costs, which moved in the case of a single three-bedroomed house from £643 in 1917 to £888 in 1920, while London Co. Council houses at Roehampton rose to £1,750! Dr. Addison was succeeded by Sir Alfred Mond (later, Lord Melchett), and in the same year the Geddes Economy Committee passed severe strictures upon the financial aspect of the scheme, and by Oct. 1922 the price had fallen to £346. The number of houses built under the Addison Scheme was 68,000 in 1921, 106,000 in 1922, 25,000 in 1923. Private building without State aid was increasing, however, reaching 53,000 houses during the same year, and it appeared that soon local authorities might

proceed with programmes independent of gov help.

With the return of the Conservative Party, Mr Neville Chamberlain again became minister of health, and during the year his H Act was passed. It was an important Act in that it established the legal position of H, gathering the errant threads from as far back as 1890, while the Tn Planning Act did the same service for Tn planning—the Tn planning Part of Burns's Act, 1909, involved a material advance in the relations between the owners of land and the local authorities, but the provisions of the Bill in its original form were greatly modified in the committee stage of its progress. Three principles are insisted upon by the Acts: (1) the power to compel local authorities to act, (2) the right of an owner to be informed of the proposals of the local authorities and to appeal to the Ministry of Health, and (3) the right of the owner to compensation in certain cases where he is injuriously affected. Part II of the H Act of 1924 authorises the local authority to carry out *Improvement Schemes* for dealing with unhealthy areas.

This provision is repeated in the H Act of 1936, as to improvement schemes already undertaken, but that Act makes no provision for future improvement schemes, and would appear so concentrate on the more drastic plan of *clearance schemes*, which involve demolition of all the buildings within the scheduled area (see *infra*). The Ministry may require the local authority to provide suitable accommodation for persons of the working classes who may be displaced by the scheme. As to houses unfit for human habitation, the local authority must cause their dist to be inspected, and there is also a duty imposed on the medical officer of health to act on his own initiative, and if approached by local gov electors, he must inspect the premises complained of and report to the local authority. The next step is for the authority to make a closing order (statutory machinery, which was borrowed from Burns's Act of 1909) prohibiting the use of the house or houses in question until they are fit for habitation. The owners must be notified, and may appeal to the Ministry of Health. Reasonable removal expenses must be paid to tenants who have to quit the condemned house or houses. If the owner fails to make the house fit for habitation within a specified period the local authority must then consider the issue of a demolition order (these orders were also provided for in the 1909 Act), and the owner has the right to be heard on it. The authority may make or postpone the order for six months, and the Ministry of Health may, on application by the owner rescind the order if good cause be shown. If, however, the order becomes operative, the owner must take the house down within three months, failing which the local authority may do so, sell the materials and pay the owner any balance after payment of expenses. Certain 'back-to-back' houses erected after 1909, and also rooms habitually used as sleeping places,

the surface of whose floors are more than 3 ft below the adjacent street, are to be deemed unfit for human habitation. It was the Act of 1903 which prohibited the erection of back to back houses, that is houses constructed without any space in the rear or any windows except in the front walls, so that there is no possibility of any through ventilation from front to rear. But where there are no by-laws requiring open space in the front as well as in the rear, the erection is not prohibited if houses one room in depth with no backyard and no rear wall windows, provided they do not back on to similar houses. Part III of the Act of 1925 relates to the provision of houses for the working classes. Every local authority must consider the needs of its area, and, as often as occasion arises, or within three months after notice given by the Ministry of Health, prepare and submit to the Ministry a scheme specifying (1) the approximate number and nature of the houses to be provided, (2) the average number of houses to the acre, (3) the quantity and locality of the land to be acquired for the purpose, and (4) the time within which the scheme or part of it is to be carried into effect. The Ministry may approve the scheme with or without modification and itself fix a time limit. Where two or more local authorities are affected, a joint scheme may be prepared. The Ministry of Health may enforce the exercise by the local authority of the statutory powers under Part III or authorise the council to act in their stead, or they may themselves take action. (For the purposes of Part III rural dist councils are included as local authorities.) Provision is also made for loans on mortgage from the local authority to persons constructing or altering houses, but such advances are subject to a limit as to the size of the house or houses under construction. Power is also given to local councils to promote the formation of public utility societies by making limited grants or loans for housing. The number of houses built with State assistance between 1919 and 1923 was 721,000, of which such assistance was £1,000 and, of the latter, 74,000 were of not more than £100 value, or £1,000 value in the Metropolitan police dist. Since the first World War and up to 1930, the total amount of payments from the Exchequer solely in respect of housing amounted to £15,000,000. Up to 1936, more than 500,000 new houses had been built in the United Kingdom. So far as slum clearance was concerned already, by that year 400,000 slum dwellers had been provided with new and better accommodation under the gov's slum clearance programme.

The Act of 1930 (the so called 'Slum Clearance' Act) made further provision with respect to the clearance or improvement of unhealthy areas, the repair or demolition of insanitary houses and H. of the working classes. It also amended all the previous Acts relating to H. subsidies. Where local authorities declare an area to be an *improvement area*, due provision

must be made for persons displaced, whether through demolition abatement of overcrowding etc., and similarly where areas are scheduled as clearance areas which in effect means demolition. Increased powers were given to local authorities to enforce notices to repair or demolish insanitary houses but an appeal lay to the co court. Where premises were demolished the co court had power to determine the lease. The re-enacting clauses of the Act of 1936, make no more than indirect reference to improvement schemes and it is to be presumed that the appropriate remedy is now only by clearance schemes except where improvement schemes were initiated before the Act of 1936 came into operation. A clearance scheme applies to an area in which the houses are by reason of disrepair or sanitary defects unfit for habitation or by reason of their bad arrangement or the narrowness or bad arrangement of the streets dangerous or injurious to the health of the inhabitants and in which the other buildings if any in the area are for a like reason dangerous or injurious to health and where the most satisfactory method of dealing with the conditions in the area is the demolition of all the buildings in the area. But the local authority is bound first to provide suitable alternative accommodation for the persons of the working classes who are displaced by the clearance. The usual conditions as to passing and submitting a resolution apply. In any case the scheme must be within the local authority's resources. A clearance order requires confirmation by the Minister. The owner or owners of the property involved must demolish it within 6 weeks from the date at which the order requires the buildings to be vacated, and if the local authority undertakes demolition they too must do so within that period.

A survey was undertaken by the Ministry of Health in 1936 into the incidence of overcrowding and over 100 local authorities co-operated in it. The result showed that of a total of 8,924,23 dwellings inspected, 341,433 (3.8 per cent) were overcrowded, and that the survey also showed that the vast majority of working class dwellers are housed well above the overcrowding level (see *infra*) except that the concentration at the disposal of large families of eight units or more has on the whole been sufficient. The average overcrowding percentage for the different classes of local authorities was 1.0 in boroughs, 7.0 in co-boroughs, 1.2 in non-co-boroughs and urban districts, 3.0 in rural districts, 2.3. The percentage in London varied from 17.2 (Shoreditch) to 1.7 (Woolwich). In co-boroughs from 20.8 (Bundoran) to 0.3 (Bournemouth) and in geographical counties from 12.0 (Durham) to 0.7 (Isle of Wight). Of 87,043 council houses inspected, 44,888 or 51 per cent were found to be overcrowded—as compared with a percentage of 34 per cent for privately owned dwellings.

The H. Act, 1935 (repealed but re-

enacted in the codifying Act of 1936), sponsored by Mr Kingsley Wood, introduced new measures for the abatement of overcrowding and the fixing of a national standard of accommodation (Schedule I). There is a statutory definition of overcrowding, though the Minister of Health and the local authority may in certain circumstances, relax the standard.

The overcrowding standard may be relaxed by the Minister only where a large proportion of the housing accommodation in the area is constituted by dwelling houses consisting of few rooms or rooms of exceptional floor area and then only after consultation with the Central Advisory Committee (see *infra*). The local authority may also relax the standard by licence but only owing to the existence of exceptional circumstances including seasonal increases of population, e.g. influx of visitors at holiday times. In any event there is a time limit on relaxations. Both landlord and tenant are made responsible for overcrowding and there are statutory defences available, e.g. if alternative accommodation was offered and refused. The steps to be taken by the local authority with regard to overcrowding are by way of inspection and report followed by proposals for new accommodation and the decision when the steps have to be completed are fixed by the Minister. If the result of the inspection is such as to call for a redevelopment scheme the local authority will have to pass a resolution to that effect and within 6 months prepare a redevelopment plan for submission to the Minister.

In regard to redevelopment the codifying Act of 1936 provided that if the local authority for any urban area are satisfied that their district comprises any area containing 50 or more working class houses, that at least one third are overcrowded or unfit or congested, that the industrial and social conditions of the district are such that the area should be used to a substantial extent for the working classes, and that it is expedient in connection with the provision of accommodation for the working classes that the area should be redeveloped as a whole, it is the duty to pass a resolution declaring the area a redevelopment area and proceed accordingly.

Under the Minister and local authority there is statutory provision for the constitution of a Central H. Advisory Committee to advise both the Minister and the various H. Management Commissions. These Commissions are of a permanent character and exercise such of the local authority's functions as to the management, regulation and control and the repair and maintenance of working class houses and other buildings or land provided in connection with such houses, as may be delegated to them by the local authority with the approval of the Minister. Provision is also made for the encouragement and promotion of H. Associations—voluntary bodies which are evidently 'public utility societies' under a new name. These associations are entitled to the same amount of subsidy

as the local authority itself would have been entitled to under the Act of 1925.

A demolition order may now be made in respect of 'obstructive buildings, which, although in themselves not unfit for habitation, would detract from the benefit of the measures taken for the improvement of H. conditions. A building, for this purpose, will be 'obstructive' if it is, by reason *only* of its contact or proximity to other buildings, dangerous or injurious to health. An offer may be made to the local authority by the owner for the sale of his interest and for assessment of compensation and the local authority is bound to accept the offer if made in the terms prescribed by statute. If no offer be made the owner must demolish within a specified period or the local authority will enter and demolish, and sell the materials in the usual way.

An exchequer subsidy will be paid in respect of blocks of flats of not less than three stories, built on expensive sites. Local authorities will be called on to contribute sums equal to half the amounts of the Exchequer payments. The idea implicit in the Act of 1935 is that private building enterprise should house the classes who can pay economic rents while the local authorities are to house the neediest with the help of subsidies.

Powers are conferred on local authorities compulsorily to acquire properties for *reconditioning* at market valuation or to arrange with property owners or public utility corporations to carry out reconditioning.

As regards the compensation provisions of the H. (Financial Provisions) Act of 1935, provided that in dwelling houses or other buildings were no longer to be included in slum clearance areas and compulsorily acquired at site value. The 'production factor' reducing compensation otherwise payable to owners of property required for H. purposes was abolished by the same Act. The Act also provided that a distinction should be made in favour of landlords who had endeavoured to maintain slum property in habitable condition, and special compensation paid to them on the basis of the amounts expended on repairs in the 5 years preceding condemnation.

Concurrently with the question of the supply of new houses, there arose as a result of the First World War, an economic problem concerning the rents of pre-war houses. Owing to the demand exceeding the supply it was foreseen that property owners would seek to profit unduly at the expense of their tenants. To prevent threatened hardship the Rent Restrictions Act of 1915 was passed, and no increase in rent beyond that of 1914 of small houses was permitted until 1919, when, owing to the greatly increased cost of repairs, some advance in rents became necessary. Perhaps profiteering was most flagrant in the case of furnished houses, and these were included in a further Act in 1920. Increases of rates, however were passed on to the tenant. In 1925 an Act which continued till 1927 provided

that houses which became empty after 1923 ceased to be controlled. (See RENT RESTRICTION ACTS.)

While, then, the primary need for new houses claimed the greater prominence in the gov.'s attention to H. in the years immediately following the First World War slum clearance received most attention in the field of legislation after 1930. Up to 1926 schemes resulted in the demolition of 11,572 houses. This number was only a very small proportion of those needing demolition. Indeed, it is a question whether that number was not equalled by the growth of fresh slum areas, through overcrowding and neglect of repairs, aggravated by demolition. The method of H. the poor in tenement dwellings, and the least popular according to the findings of the Chamberlain Committee on Unhealthy Areas, appeared to be the only sound alternative in congested areas built in areas, as they are called. The difficulties of space and the workers travelling to work offer no ready solution. But in rural areas it is possible to develop H. homes side by side with the planning idea. By the Act of 1919 every urban authority of 20,000 inhabitants was compelled to offer schemes for the approval of the Ministry of Health. An important part of the schemes was the division of the new areas into zones, for industrial, commercial, shopping, residential, and public use. By 1926 nearly 300 schemes had been evolved. Some 800,000 persons were removed from slums into new houses during the first five years' programme for slum clearance (1919-24) and during that period 168,134 houses were demolished. Since that year the plan was extended to cover over 130,000 slum dwellings. Leeds, the most notorious for slums, then had the most advanced schemes for H. Decentralised renting was introduced in 1921. The need was to be housed in accordance with the size of their families, regardless of their paying capacity, and the rents were to be fixed in proportion to their incomes.

It is a cynical comment on the great procession of H. Acts—with their total annual burden of £1,000,000 accrued by 1935—that the 'G' bomb has done more to eliminate slums than all the legislation. When the air raids began in 1940 overcrowding in shelters and on tube platforms at night rendered the painfully won national standard of accommodation of 1935 a mockery. Fortunately large-scale evacuation from London prevented serious congestion in the Metropolis despite considerable destruction of H. accommodation. Even where bombing had been concentrated on a particular area, and workers had had to move away from their work, the great net-work of London's transport services was instrumental in obviating any enduring difficulty in travelling. But this fortuitously happy combination of circumstances did not obtain in many of the chief provincial cities, which had suffered heavy bombardment. There, evacuation had been on a much smaller scale, and the destruction of living accommodation raised



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an acute H. problem. Furthermore, overcrowding and social distress were only the beginning of the nation's difficulties in this matter. Some industrial towns were soon being threatened with a situation in which it was not physically possible to house workers within reasonable distance of their work. This problem was beyond the control of the local authorities, and its solution required compulsory billeting over a wide area, coupled with the general requisitioning of all available large or empty houses and halls. It called also for the immediate construction of new accommodation in the form of huts, hostels, and temporary houses and a still more vigorous evacuation policy. It became obvious that rehousing was not simply a post-war problem; in some areas it was a problem which, on a temporary basis at least, required prompt solution in order that neither public morale nor production might suffer.

**Housing after the Second World War.**—A greater H. problem than that imposed on the country by the First World War was that which followed the Second. Millions of houses were destroyed or more or less seriously damaged in the air raids; moreover the programme of house-building during the war years was a very limited one, as was that of the immediately antecedent period. After hostilities had ended Britain entered upon an era of the most acute economic crisis when the shortage of both labour and, still more, of materials made it impossible for some time to carry out even a small part of the planned H. programme. Far more new permanent houses were planned and actually started in 1946 than could possibly have been finished within a reasonable time. Up to the end of that year some 170,000 families were found accommodation by the repair or refashioning of existing dwellings, as against 150,000 families rehoused by the construction of new dwellings. The most fruitful form of new construction was the temporary housing scheme which yielded 92,000 new homes (pre-fabricated houses). The three types of permanent house construction—provision by local authorities, provision by private builders and other private agencies, and the rebuilding of war-damaged dwellings—together produced no more than 55,000 dwellings. Of these, 24,000 were municipally owned and 25,000 (nearly all for sale) privately owned. During the war scarcity of building labour was generally expected to be the main obstacle to a rapid expansion of house construction. As demobilised building workers became avail-

able in all districts, tremendous pressure was applied to get house building started in all districts, in order to prevent any drift of labour out of the building industry. But later, and before the close of 1946, it became easier to enlarge the number of workers than to enlarge the supply of materials needed to keep them fully occupied, and in Dec. 1946 the industry's total labour force 1,250,000 was practically equal to what it had been in 1939 (June) 1 or 1947 H. work of all kinds was allotted three-fifths of all building labour. Work on existing houses (maintenance, repairs, conversions, (tc.) was to be allowed to absorb 280,000 operatives, while 300,000 were to build new permanent houses. With this labour force, and with a stock of 204,000 unfinished dwellings left over from 1946 (including 97 per cent of the municipal houses started in 1946), the aim for 1947 was: the starting of 240,000 new permanent dwellings, of which 201,000 would be carried forward for completion in 1948, and the completion of 240,000, including the 204,000 brought forward from 1946. The houses to be completed included 190,000 municipal dwellings, 15,000 war-damaged houses and 35,000 to be built by private enterprise and other agencies. Some 60,000 bungalows wanted to wind up the temporary H. scheme were also included in the 1947 programme. The first white paper on post-war H. (dated March 1945) set out three objectives. The first was to give every family a separate home and, to do this, it was estimated that 750,000 dwellings would be needed. The second was to continue the slum-clearance schemes suspended during the war; it is estimated that another 500,000 houses would be needed to replace unfit houses and to relieve overcrowding already condemned before 1939. The third or long-term objective was defined as 'a continuous programme of improvement in housing conditions, bringing old houses up to date, converting others into flats, and building new houses where necessary to meet changes in the location of industry. No figure was assigned for this but the minister of health, much later, said that they had to 'envisage a programme of something like 4,000,000 to 5,000,000 houses, and even then we should have some arrears still left.' Though the target of 750,000 houses above mentioned was reached the number proved hopelessly inadequate to its purpose. Between the end of the war and mid 1949, the number of new houses completed in Great Britain reached 684,013 (226,897 permanent and 457,116 temporary) during Sept. was attained the objective of 750,000 addi-

#### SOME EXAMPLES OF ENGLISH HOUSING

1. Acrey type houses of non traditional construction in the New Forest, living room kitchen, parlour scullery, three bedrooms, bathroom and W.C., wash house, fuel store and second W.C. in out building. 1947.
2. Traditional brick houses in Barrington Road, Worthing (architect C. Cowie Voysey, F.R.I.B.A. living-room, kitchen, three bedrooms, bathroom, separate W.C., and outbuilding containing fuel and tool stores. 1947. *C.O.I. Crown copyright*
3. Aluminium prefabricated houses at Cheltenham, two bedrooms. *Hauspav.*
4. Flats at Hildrop Estate, Islington. 207 flats in 4 blocks—2 one-room, 33 two-room; 81 three room; 81 four-room; 10 five room, completed in 1948. *London County Council.*

tional houses, which the Coalition Gov. had estimated at the end of the war to be necessary to provide a separate home for each family in need of one. In mid-1949, 190,486 permanent houses were under construction in Great Britain, and an additional 63,867 more were approved but not begun. The monthly figure of permanent houses put into occupation over the preceding year exceeded 15,000, and the yearly total increased steadily in the period 1945-48. Moreover, there was a gov. programme for the building of 15,000 aluminium bungalows, allocated to mining areas to relieve a particular need. For rural dists. Sir Edwin Airey designed a two-storey house of concrete blocks and posts, and 2,000 of these were allocated. The need for increased production of coal and food led the gov. to give priority to the housing needs of workers in mines and on the land; from April 1947 to June 1949 30,328 new permanent or temporary houses built by local authorities were let to miners, and from April 1945 to June 1949 18,418 to agric. workers. The difficulty of softwood timber imports was a limiting factor; supplies from Europe and Russia contracted sharply in comparison with pre-war years, and N. Amer. imports were a charge on dollar resources. By the end of June 1949, 912,700 families had been housed: 681,043 in permanent or temporary new houses; 139,887 by the repair of houses rendered uninhabitable by bombing; 111,770 by the adaptation and conversion of existing dwellings. When the use of service camps and temporary huts, and requisitioning is taken into account, 999,710 families were housed. Some three and a quarter million people had, in sum, been provided with homes. Repairs were also effected to 775,000 damaged but habitable houses.

More and better houses have been built in Great Britain than after the First World War, though perhaps fewer than in 1933 when there were fewer men to build them. Houses today however are one-fifth larger than before 1939 and there are more fittings, points and gadgets. This may partly account for their taking longer to build today. It has been calculated that if the housing situation requires a programme of four to five million houses at the pre-1939 rate of building it would take from thirteen to sixteen years to complete; and at the present (1949) rate it might take seventeen to twenty years. As regards construction, some experts think there is not sufficient experimentation with non-traditional methods; others, however, think that brick is always to be preferred. Experience has shown that the 'pre-fab' house takes as long to build, besides costing as much, if not more. A committee of inquiry into cost recently reported that a typical local authority house of 1947 cost 31 times as much as its pre-war counterpart and required double the labour and a third more material. In London the average cost was £543 in 1939, including the cost of land, roads and sewers; in 1949 the comparable average figure was £1816—threefold more. Rents, however, are not three times more.

The rents ordinarily payable by the persons of the working classes are mostly controlled rents under the Rent Restriction Acts, pegged at 1914 rents plus 40 per cent in the case of old-controlled houses, or at 1939 rents for others. To enable local authorities to keep the rents of new houses down to a reasonable level, the subsidy was raised to £16 10s. a year for 60 years from the State, and to £5 10s. from the local rates or £22 per house in all. This subsidy, it was estimated, would enable the rent to be fixed at 10s. a week. But though building costs had risen since 1946 the subsidy remained the same, and to meet the higher interest charges on the higher capital cost, local authorities had to increase the rent, or make larger contributions from the rates, or both. Private builders were (1949) building for owner-occupiers one-fifth of the total number of houses allocated; in addition, the greater proportion of local authority houses were being erected by private builders, working under contract for the local authority. In June 1949 the maximum price of privately-built houses was made variable according to the type and size of house, and was to be assessed by the local authority according to the cost of similar houses built by them, instead of being tied to the previous limit of £1,300 (£1,100 in London). Also the maximum superficial area of such houses was raised from 1,000 sq. ft. to 1,500 sq. ft.

Under the Housing Act of 1949, which applies to England and Wales, improvement carried out by the local authority must ensure satisfactory accommodation for at least thirty years, and the work must conform to standards of amenity and fitness specified by the minister. Exchequer grants towards the cost will equal three-quarters of the estimated annual loss to the local authority, the remaining quarter to be met from local rates. Local authorities will pay grants for the approved schemes of private owners, to the maximum of one-half; an Exchequer contribution will be given to the local authority. From most sections of the Housing Acts the term "working classes" is deleted, thus enabling local authorities to create balanced communities by the provision of mixed estates of houses of varying type and size. Local authorities are empowered to provide restaurant and laundry services and to sell furniture. Allowances for persons displaced from sites acquired for housing are permitted. Control of selling price and rents of new premises provided by building or conversion is extended from Dec. 1949 to Dec. 1953. The £1,500 limit on house-value for which councils may loan money for purchase under the 1936 Housing Act or the Small Dwellings (Acquisition) Acts is raised to £5,000. Other provisions include special subsidies for residential hotels provided by housing associations, new tn. development corporations, or local authorities; the preservation of houses which have special historic or architectural interest; an increase of Exchequer subsidies and contributions from the rates in cases where building costs are



raised by measures (e.g. building in stone) taken to preserve the character of the surroundings, such measures to be approved by the minister; and the quashing of demolition orders, operative before Jan. 1, 1946, where houses have been made fit for habitation, as has happened in a small number of cases. The extra subsidies payable for houses and flats built on expensive sites will be adjusted for schemes approved by the minister after Feb. 1949, in order to take into account variations in density of development.

See W. Casson and A. Ridgway, *Housing and Town Planning Act of 1909*, 1912; H. E. Smith, *Municipal and Local Government Law*, 1920; B. S. Towrope, *A Handbook of Housing*, 1924; F. Fremantle, *Housing and the Nation*, 1926; T. Sophian, *The Housing Act, 1935*; The League of Nations, *Urban and Rural Housing*, 1939; Ministry of Health, *Annual Report, 1941-45*, 1945; M. Bowley, *Housing and the State, 1919-1944*, 1945; Dent's 'Design for Britain' booklets, 1942-44; Bournville Village Trust, *Land-usage and Housing Development* 1949; and S. Gale, *Modern Housing Estates*, 1949.

**Housman, Alfred Edward** (1859-1936), Eng. Latinist and poet. Educated in Worcestershire at Bromsgrove School; St. John's College, Oxford. Higher-div. clerk in H. M. Patent Office, 1882-92. Prof. of Lat., Univ. College, London, 1892-1911. Fellow of Trinity College, and prof. of Lat., Cambridge, 1911. Pub. poetry is *A Shropshire Lad* (1896), *Last Poems* (1922). Ed. *Manilius*—Bk. I, 1903; Book II, 1912; Book III, 1916; Book IV, 1920; Book V, 1930; *Juvenal* (1905), *Lucan* (1926), *More Poems* was pub. posthumously in 1936. There have been many reprints of *A Shropshire Lad* which is a string of sixty-three ballad-like poems (they have been set to music)—on love, country-life, drinking, and fighting. H.'s poetic craftsmanship is remarkably perfect in one who could give comparatively little time to verse. His total output is small, but in his work there is hardly a weak line. He has the secret of creating beauty by scrupulous elimination of the decorative ornamental. In regard to the content of his poetry, he has been compared to Hardy, but the likeness is superficial, for his philosophic outlook is that of the unregenerate fatalist, despairing but resolute in his acceptance of man's hopeless struggle. See L. Housman, *Some poems, letters and a personal memoir*, 1937; and G. Richards, *Housman*, 1939.

**Housman, Laurence**, Eng. author and illustrator, b. 1865; brother of Alfred Edward H. Studied art at S. Kensington, and illustrated: George Meredith's *Jump-to-Glory Jane* (1892), Christina Rossetti's *Goblin Market* and Jonas Lie's *Weird Tales from Northern Seas* (1893), his sister Clemence's *Were-Wolf* (1896), Shelley's *Sensitive Plant* (1898), and his own *Farm in Fairyland* (1894) and *New Child's Guide* (1911). His poetry, much influenced by D. G. Rossetti, includes: *Spikenard* (1898), *Mendicant Rhymes* (1906), *The Heart of Peace*, etc. (1918), *The Love Concealed* (1928). His tales include: *All Fellows* (1896), *The Blue*

*Moon* (1904), *John of Jingalo* (1912), *The Royal Runaway* (sequel to preceding, 1911), *Turn Again Tales* (1930). His novels are: *An Englishwoman's Love-Letters* (1900), *A Modern Antares* (1901), *Subrina Warham* (1904), *Trimblerrigg* (1921), *Uncle Tom Pudd* (1927), *H.L.H. the Duke of Flamborough* (1928). Plays include: *Prunella* (with H. Granville-Barker, 1911), *The Death of Orpheus* (1921) *Possession* (1921), *Little Plays of St. Francis* (1922). He has also written *Arthur Hoyd Houghton* (1896), *Dethronements* (imaginary dialogues, 1922), *Echo de Paris* (about Oscar Wilde, 1923), *Palace Plays* (1931), *The Queen's Progress* (1932), *The Unexpected Years* (1933), *Palace Scenes* (1937), *Collected Poems* (1938), *Gravious Majesty* (1941), *Samuel, The Kingmaker* (1944).

**Housain, or Hussein**, son of Ali and Fatima, see HASSAN.

**Houssay, see HAUSAY.**

**Houssaye (or Housset), Arsène** (1815-96), Fr. littérateur and poet, famous by 1836 for his novels, *La Couronne de Bleue* (1840), and *La Pêcheresse* (1865). He was director of the Théâtre Français (c. 1849-56), and then became inspector-general of the Musées. His works include criticisms of art and literature, poetry (*Poésies Complètes*, 1849), and many novels. His *Confessions* appeared in 1845-91. See J. Lemaitre, *A. Houssaye*, 1897.

**Houssaye, Henri** (1818-1911), Fr. historian, son of Arsène. His early works, such as *Histoire d'Apelle* (1867), *Histoire d'Alcibiade* . . . (1873), dealt with classical antiquities. His best writings are those treating of the Napoleonic period. '1814' (1888), followed by '1815' in three parts (1893-1905), the second dealing with *Waterloo*, the third with *La seconde restauration, la terreur blanche*. *Napoléon, homme de guerre*, appeared in 1901. H. became a member of the Fr. Academy, 1894. He wrote under the pseudonym 'Georges Werner.' See L. Solovet, *Henri Houssaye*, 1901.

**Houston**, cap. of Harris co., Texas, U.S.A., on Buffalo Bayou, 18 m. N.W. of Galveston on the gulf of Mexico. The Bayou is navigable to H. and over fifty steamship lines use the port. H. is also a very important railway centre. Manufs. include engines, machinery, railway-cars. Sugar, cotton, and oil are produced, and lumber trade flourishes. Settled in 1836, it was named after Sam H., and has fine public buildings. Pop. 384,500.

**Houston, Samuel** (Sam) (1793-1863), Amer. soldier and politician, first president of Texas (1836). In early life he lived among the Cherokee Indians in Tennessee. He enlisted, 1813, serving in the army till 1819, notably in Jackson's campaign against the Creeks. H. then left to study law, and became governor of Tennessee, 1827. On the outbreak of the Texan War, H. became leader of the Amer. colonists. After some losses he defeated the Mexicans under Santa-Anna on the San Jacinto (1836), thus winning independence for Texas. He was elected president, and served again from 1841 to 1844. On the annexation of Texas (1845),

he represented it in the U.S.A. Senate, 1846-59. Elected governor of Texas in 1859, he was dismissed (1861) for opposing his state's secession. See lives by A. Williams, 1893; W. Crane, 1881; H. Bruce, 1891 and M. James, *The Raven: the Life of Sam Houston*, 1929.

**Houting**, see under CORGONUS POLLAN.

**Houton**, see NORMOT.

**Hove**, or **West Brighton**, municipal bor. and the most fashionable quarter of Brighton, on the coast of Sussex, England. It has many fine shops and clean well-spaced streets. Along the parade are well-kept gardens. The Sussex Co. Cricket Ground is here. Pop. 75,300.

**Hoven**, see HOOVE.

**Hovey**, Richard (1861-1900), Amer. poet, b. at Naumk, Ill.; graduated at Dartmouth, and followed various professions in succession; came to Europe and trans. poems of Maeterlinck. Wrote much original verse, including *Luincht and Guinevere*, a series of dramas, *Tallierin*, *A Masque*, and *Seavari*, pub. together in a posthumous collection, *The Holy Grail* (1907). Collaborated with Bliss Carman (q.v.) in *Songs from Vagabondia* (1893 and 1896), and pub. miscellaneous poems, *Along the Trail* (1898).

**Howard**, illustrious Eng. family, dukes of Norfolk since the fifteenth century, at the head of the nobility, perhaps descended from the Hereward of Edgar's reign (957-75). The first noted member of the house was Sir William H., or Haward, chief justice of the Common Pleas under Edward I. and Edward II. (1297-1308). His grandson, Sir John, was admiral and captain of Edward III's navy in the N., and sheriff of Norfolk. The admiral's great-grandson, Sir John, was a prominent Yorkist, created first duke of Norfolk and earl-marshal of England (1483). He fell at Bosworth Field (1485) fighting for Richard III. His son, Thomas, earl of Surrey, was imprisoned for three years, but then regained his rights and titles, commanding the Eng. at Flodden (1513). His son, Thomas, third duke of Norfolk, was attainted by Henry VIII., and only escaped a death similar to that of his son, Surrey, the poet, by Henry's own death. Thomas, the fourth duke, was beheaded for communicating with Mary Queen of Scots (1592). His son, Philip, earl of Arundel, died in the Tower (1535). The family honours were restored by the Stuarts to his descendants. Thomas became earl of Arundel and Surrey (1604), and earl marshal (1621). Bernard Edward H. (duke of Norfolk, 1815), was great-grandfather of the sixteenth duke, Bernard Marmaduke Fitz-Alan H. (b. 1908).

The numerous branches of the family of H. are represented by the dukedoms or earldoms of Carlisle, Suffolk, Berkshire, Northampton, Arundel, Wicklow, Norwich, Eppingham, and the baronies of Hindon, Howard de Walden, Howard of Castle Rising, Howard of Eppingham, and Howard of Glossop. See Sir W. Dugdale, *Baronage of England*, 1675-76; G. Howard, *Historical Anecdotes of the Howard Family*, 1769; A. Collins, *Peer-*

*age of England*, 1779; M. Tierney, *History of Arundel*, 1834; H. Howard of Corby, *Memorials of the Howard Family*, 1834; H. K. Causton, *The Howard Papers*, 1863; C. T. Gatty, *The Noble Family of Howard*, 1879; G. Brennan and E. Statham, *The House of Howard*, 1907.

**Howard, Catherine** (c. 1520-12), granddaughter of the second duke of Norfolk (d. 1524); brought up by his widow, she became fifth wife of Henry VIII. soon after the divorce of Anne of Cleves (1540). This marriage pleased the Rom. Catholic party, but Catherine was soon accused of immorality with Culpeper and Dereham. She protested that she had been faithful to the king since her marriage, but was beheaded with all the partners of her intrigues, including Lady Rochford (1542). See J. Froude, *History of England*, iv., 1858; Agnes Strickland, *Lives of the Queens of England*, iii., 1877.

**Howard, Charles**, second Lord Howard of Effingham (1536-1624), Eng. admiral, grandson of the second duke of Norfolk. He held various civil and military posts under Elizabeth, becoming lord high admiral (1593). As commander-in-chief against the Sp. of the Armada (1588), he had Drake as his second-in-command. H. was associated with Essex (1596) in the successful expedition against Cadiz, and made earl of Nottingham in reward for his services. When fresh Sp. invasions were feared, between 1597 and 1599, Nottingham was appointed lord-lieutenant of England. He continued to hold high office under James I. See J. Campbell, *Lives of British Admirals and Eminent Seamen*, i., 1779.

**Howard, Sir Ebenezer**, Eng. urbanist (1850-1924); b. at London. Began work as a clerk in various stockbrokers' offices in the city. Emigrated to Nebraska where he farmed for a short time, but moved to Chicago and took up the calling of shorthand writer. Returned to England in 1876 where we worked at shorthand writing in the Law Courts and elsewhere. The Garden City founded by A. T. Stewart on Long Island and now a suburb of New York probably first aroused his interest in the planning. H. married in 1879, and at the Zetetical Society, a debating club, first met G. B. Shaw and Sidney Webb.

Possibly suggested by Henry George's *Progress and Poverty*, H.'s scheme for a garden city based on land values created by the community was embodied in his book *Tomorrow: A Peaceful Path to Real Reform* (1891, revised 1902) which expounded his theory of rent-rates. H. did not advocate the nationalisation of land but its ownership by municipal authorities who would derive the whole of their revenue from rents or leases, thus ensuring that development value of land should accrue to the advantage of the community. He inspired though he did not organise the founding of Letchworth and Welwyn Garden Cities in 1903 and 1919 respectively. Became O.B.E. 1921, knighted 1927. Died at Welwyn Garden City, where he is commemorated by a memorial, as also at Letchworth. See

life by D. Macfadyen, 1933; and C. B. Purdom, *The Building of Satellite Towns*, 1925, 1949.

Howard, Frederick and George William Frederick, see CARLISLE, EARLS OF.

Howard, Henry and Thomas, see SURREY, EARLS OF.

Howard, John (1726-90), Eng. philanthropist, especially famous for his labours to secure prison reforms. While attempting to go to the relief of the survivors of the Lisbon earthquake (1755), he was captured by the Fr., but soon managed to effect an exchange for himself and his fellow-prisoners. He became high sheriff of Bedfordshire (1773), and in this capacity had his interest in the condition of prisoners roused. He travelled widely, visiting gaols throughout England and Europe. His *State of Prisons in England and Wales, with an Account of some Foreign Prisons* . . . (1777), resulted in the adoption of the hard-labour system. An Appendix was added in 1780. His *Account of the Principal Lazarettos in Europe* appeared in 1789. He died of camp-fever at Dophinovka, now Stopanovka, near Kherson in Russia. See lives by J. Aikin, 1792; J. Baldwin Brown, 1818; T. Taylor, 1836; W. Dixon, 1849; J. Field, 1850; J. Stoughton, (new ed.) 1881; E. H. C. Gibbon, 1921; also *Anecdotes of J. Howard by a Gentleman*, 1790, and J. Field, *Correspondence of J. Howard*, 1853; A. R. Gardner, *The Place of John Howard in Penal Reform*, 1920. There now exists a H. League for Penal Reform with offices in London to promote the right treatment of delinquents and the prevention of crime.

Howard, Leslie, stage name of Leslie Stainer (1893-1943), Eng. actor, b. in London; educated at Dulwich College. On leaving school he worked as a clerk in a bank until the outbreak of war in 1914 when he served in the army until his discharge in 1917. He then decided to fulfil an early ambition to become an actor. He joined a touring company and his first appearance was as Jerry in *Peg o' My Heart* in 1917. He appeared on the London stage the following year, playing in *Mr. Pim passes by*, *Our Mr. Hepplewhite*, and other plays. He spent the next few years in New York, and returned to London in 1925, appearing at the Queen's Theatre in *The Way You Look at It*. During a second visit to New York in 1927 he produced *Her Caribbean Lover*, in which he made one of his greatest stage successes. He brought the play to the Lyric Theatre, London, the following year. Other notable performances were in *Berkeley Square* (1929) and *This Side Idolatry* (1933), in which he played the part of Wm. Shakespeare. He was himself the author of a play produced in New York as *Murray Hill* in 1927 and in London as *Tell me the Truth* in 1928. From 1930 onwards he played a number of leading parts in films, including *Of Human Bondage*, *The Petrified Forest*, *The Scarlet Pimpernel*, and its modern counterpart *Pimpernel Smith*, and *Eggmalion*. During the Second World War he did valuable work as a 'voice of Britain'

in his broadcasts to overseas listeners. In 1943 he went to Madrid to lecture on behalf of the Brit. Council. He was killed on the return journey when the aeroplane in which he was travelling was brought down by enemy aircraft (June 1, 1943).

Howden, par. and mkt. t.n. of E. Riding Yorkshire, England, on the Ouse, 3 m. N.N.E. of Goole. It has a thirteenth-century church and a famous horse fair. Coal is mined. Pop. 11,900.

'Howe,' battleship of the *King George V.* (g.r.) class, laid down in 1937 on the Clyde and commissioned in 1942. Her displacement, complement, size and armament are similar to those of the *Anson* (g.r.).

Howe, Elias (1819-87), Amer. inventor, b. at Spencer, Massachusetts. While employed as a machinist he conceived the idea of inventing a sewing-machine, entered into partnership with Fisher (1844), and completed his lock-stitch machine, 1845. He was granted a patent (1846), but success was long in coming to him. The imitations and improvements of Isaac Merritt Singer (1811-75) and of others infringed his patent, but H.'s rights were finally estab. after a law suit (1854). See J. Parton, 'History of the Sewing-Machine,' in the *Atlantic Monthly* (May 1867); P. G. Hubert, *Inventors*, 1893.

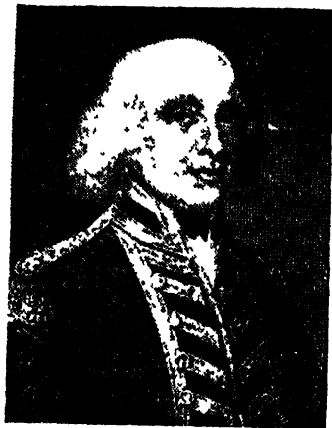
Howe, John (1630-1705), Eng. dissenting minister, known as the 'Platonic Puritan.' He was domestic chaplain to Cromwell the Protector and his son Richard (1656-59). The Act of Uniformity (1662) ejected him from Great Torrington. He returned to London as minister of a Puritan congregation (1675). He travelled abroad with Lord Wharton (1685), but returned on James's 'Declaration for Liberty of Conscience' (1687). His works include: *The Blessedness of the Righteous* (1668), *The Redeemer's Tears* . . . (1684), and his fine production *The Living Temple* (1671-1702). See lives by E. Calamy, 1832; S. Dunn, 1836; and R. F. Horton, 1896.

Howe, Joseph (1801-73), Canadian statesman, b. at Halifax, N.S. Became (1828) proprietor and ed. of the *Academy Scotian*, to which he contributed many sketches. He was elected to the local Parliament, and was instrumental in winning for Nova Scotia a responsible gov. Became speaker of assembly (1840), secretary of state for the dominion (1870), and governor of Nova Scotia (1873).

Howe, Julia (née Ward) (1819-1910), Amer. poetess and philanthropist, married in 1843 to Dr. Howe. With him she ed. the *Boston Commonwealth* (1851-53). She lectured on social subjects, and was active in championing the cause of women, and urging prison and other reforms. She helped to organise the Amer. Women Suffrage Association (1869), and in 1872 was president of the New England Women's Club. Her works include: *Passion Flowers* (1854), 'Battle-Hymn of the Republic' (1862), and other poems, all collected in *From Sunset Ridge Poems Old and New* (1898), two dramas (1855, 1858), the prose works *Sex and Education* (1874), *Modern Society* (1881),

*Reminiscences, 1810-99* (1900). *Sketches of Representative Women of New England* (1905). See *They Walk with God*, by her daughter, Laura E. Richards, 1919.

**Howe, Richard, first Earl** (1726-99), Eng. admiral, a younger son of Emanuel Scrope Howe, second viscount Howe in the Irish peerage; his mother was the daughter of Baron Kichmanssee, Master of the Horse to George I. when Elector of Hanover. He served with distinction in



RICHARD, FIRST EARL HOWE

the Seven Years' war against the Fr. (1756-63), accompanying Boscawen to N. America, helping to capture the 'Alcide' and the 'Lys', and being present at Quiberon Bay (1759). He became treasurer of the navy (1765-70). In 1776 he returned to N. America as commander-in-chief, and forced the passage of the Delaware, successfully resisting the Fr. under D. E. Laung. He next won fame by his relief of Gibraltar (1772), and returning to England became first lord of the admiralty (1783-88). His most famous achievement was the victory of 'the glorious first of June' (1791) over the Fr. off Ushant. See life by Sir J. Barrow, 1838. See also: I. Campbell, *Lives of the British Admirals and Eminent Seamen*, 1779; J. Rupp, *Naval Biography*, 1, 1826; and T. Anderson, *The Command of the Howe Brothers during the American Revolution*, 1936.

**Howe, Samuel Gridley** (1801-76), noted Amer. philanthropist, known as 'the Lafayette of the Gk. Revolution' for his services in the War of Independence from 1821-30. After returning to Boston he worked to establish there a school for the blind, becoming director of the Perkins Institute (1822). He was especially successful over the case of Laura Bridgman (1829-83) (q.v.). In 1846 Dr. Howe concerned himself with the education of idiots and the feeble-minded. He wrote *Historical Sketches of the Greek Revolution*

(1828), and a *Reader for the Blind*. See J. G. Whittier's poem, *The Hero*; J. W. Howe (his wife) *Memoir*, 1876; life by F. B. Sanborn, 1891; and L. E. Richards (ed.), *Letters and Journals*, 1910.

**Howe, Sir William, fifth Viscount** (1729-1811), Brit. soldier of the Amer. Revolution, succeeded his brother Richard as Viscount H. (1799); this Irish peerage becoming extinct on his death. Going to America (1758) he helped in the capture of Louisburg, and accompanied Wolfe to Quebec. He returned to Europe (1760), and after holding various commands became major-general (1772). He was again sent to America, commanding the Brit. at Bunker's Hill (1775). Driven from Boston by Washington (1776), he won the battle of Long Island, and entered New York. He later defeated Washington at the Brandywine (1777), and occupied Philadelphia, resigning soon afterwards. See *Narrative of Sir W. Howe*, 1780; and T. Anderson, *The Command of the Howe Brothers during the American Revolution*, 1936.

**Howeloke, Johann**, see HEVERIUS.

**Howell, James** (c. 1594-1686), Brit. author, graduated from Oxford (1613). He travelled abroad (1616-22), and then engaged for a time in diplomatic work. He was imprisoned from 1643-51, but released on the Restoration (1660), and appointed historiographer royal of England. His works include: *Druidology*; *Dodona's Grove or the Vocall Forrest* (1640, a poem); *Instructions for Foreign Travellers* (1642); *Le uon Ptolemy* (1660); and the *First and Most Familiar Letters Domestic and Foreign* (1645-1655, reprint by J. Jacobs of 10th ed. 1890-1891). Reppner's ed., 1907, (Temple Classics series). See W. Vain, *Notes on the writings of James Howell*, 1921, and E. Benson, *James Howell*, 1922-27.

**Howells, William Dean** (1837-1920), Amer. novelist, critic, and poet, b. at St. Martin's Ferry, Belmont, Ohio; son of Wm. Cooper H. He early became a journalist in Ohio, was United States consul at Venice, 1861-65, and on his return was connected with sev. New York newspapers, and with the Boston *Atlantic Monthly* (1866-81), becoming editor about 1871. He was the recognised leader of the realistic school, and his works discussing familiar incidents and details of ordinary everyday life in America have been both popular and influential. He tried some of the subtlety of Henry James, with a plainer narrative style. He pub. a campaign *Life of Lincoln* (1860), and *Poems by Two Friends* (H. and J. Piatt). Other works are: *Venetian Life* (1866), *Thou Wedding Journey* (1872), *The Lady of the Aroostook* (1874), *A Modern Instance* (1882), *A Woman's Reason* (1884), *The Rise of Silas Lapham* (1885), *The Minister's Charge* (1886), *A Hazard of New Fortunes* (1889), *The Landlord at Lion's Head* (1897), *Certain Delightful English Towns* (1906), the farces *Out of the Question* and *The Mouse Trap*; *Poems* (1873, 1886, 1895), *Literary Friends and Acquaintances* (1901), *Heroines in Fiction* (1901), *Literature and Life* (1902), *London*

*Films* (1905), *Between the Dark and the Daylight*, *Fennel and Rue* (1908), *Imaginary Interviews* (1910), *My Mark Twain* (1910), *New Leaf Mills and Familiar Spanish Travels* (1913), *The Seen and Unseen in Stratford-on-Avon* (1914). See J. M. Robertson, *Essays towards a Critical Method*, 1889; H. C. Vedder, *American Writers*, 1894; O. W. Kirkhus, *William Dean Howells*, 1921. He has been classed as 'one of the five Amer. novelists of international distinction.' See *Life in Letters*, by his daughter, Mildred Howells, 1924.

**Howell's State Trials.** The true originator of this series of 'State Trials' was Cobbett (1762-1835), in 1809, but they received their present title as T. B. Howell (1768-1815) ed. vols. i.-xxi. (1809-15), and his son T. J. Howell (d. 1858), vols. xxii.-xxviii.

**Howitt, William** (1792-1879), Eng. author. He began to write at an early age, and when he was thirteen, one of his poems appeared in the *Monthly Magazine*. In 1821 he married Mary Gotham, and husband and wife wrote many books in collaboration. He early studied natural science and modern literature and languages, becoming a very miscellaneous and prolific writer and very popular. *The Book of the Seasons, or the Calendar of Nature* (1831), a *Popular History of Priestcraft* (1833), *Pantula, or Traditions of the Most Ancient Times* (1835), and the *Rural Life of England* (1838), give some idea of his scope. His most successful work was a *Popular History of England* (1856-62). The literary work of H. and his wife covered poetry, fiction, history, translations, and social and economic subjects; useful and pleasing in its day, little of it has survived. Mary Howitt's autobiography was by her daughter in 1889.

**Howitzer**, name applied to a particular piece of ordnance which is of the greatest value in sieges. The word is derived from a Bohemian word meaning a catapult. This particular form of gun has been in fairly general use since the sixteenth century. It is a small, light gun which fires a shell at a small velocity but at a steep angle of descent. It has therefore proved invaluable as a means of bombarding trenches and scouring low-lying and hidden defences. The First World War occasioned a great development in Hs., and the employment of large pieces by the Gers. during the siege of Liège marked a definite advance in construction. The fortifications constructed before the war were no match for the huge weight of projectile used on them, so that when trench-warfare set in, and it was necessary to construct shelters for personnel, gun emplacements and protection of any kind within range, all former specifications of such works required considerable modification to meet the new weapon. Although the Gers. had this start of the Allies, the latter took prompt measures to nullify the disadvantage, and in the course of time heavier and heavier Hs. appeared in the zone of operations, until the 9.2-in. ('Mother') and the largest, the 16-in. ('Granny'), appeared in 1915. Hs. were generally employed against forti-

cations, dumps, guns and for cutting wire entanglements. If their work had been done too well they disturbed the surface of the earth so much that it was often difficult for the slide which employed them to traverse the ground to carry out the intentions of the commander. Transport and the removal of casualties were hampered a good deal in this manner. The conditions of static warfare favoured the employment of huge Hs., but their transport and ammunition supply precluded their employment in war of movement.

**Howling Monkeys**, name given to the species of *Myctes*, a genus of mammals belonging to the order Primates and the family Cebidae. They are hideous in appearance, having a prominent face and deep jaw, while the tail is long and prehensile. The howling is produced by the unusually developed sacular diverticula of the larynx. These monkeys are common to Central and S. America.

**Howrah**, tn. of W. Bengal, India, on the R. Hugli, opposite Calcutta, of which it forms a suburb. It is a railway terminus, and has dockyards and manuf. of jute and cotton. Pop. 379,290.

**Howth**, tn. situated on a rocky peninsula (563 ft. high) of the same name, N. side of Dublin Bay, Ire. It is an important fishing depot and a summer resort. There are ruins of an abbey of the thirteenth century. Pop. 3000.

**Hoxter** tn. on the Wezer, in Westphalia, Germany, 37 m. N.E. of Paderborn. Here are Renaissance timber buildings. Near by at Corvey is the famous castellated Benedictine abbey suppressed in 1503. Pop. 7800.

**Hoxton** (the 'Hochestr' of the Domesday Book), dist. of London, metropolitan bor. of Shoreditch, 2 m. N.E. of St. Paul's. In the Elizabethan era it was a pleasure resort. Cabinet-making and upholstery are carried on. Pop. 16,686.

**Hoy** (Scandinavian *Hoy*, high is.), one of the Orkney Is., Scotland, 1 m. S. of Stronsness, and separated from the mainland by the Sound of Hoy. Area 53 sq. m., length 13½ m., breadth 3 furlongs to 6½ m. It rises abruptly from the sea and has magnificent cliff scenery. The chief heights are Braebrough Head (1140 ft.), Ward Hill (1561 ft.), and Cullage Hill (1120 ft.). The 'Old Man of Hoy' is a detached sandstone rock, 150 ft. high, 1 m. from Roray Head. There is a good harbour at Longhope. Pop. 1000.

**Hoylake**, tn. and eccles. par. on the Wirral Peninsula, Cheshire, 8 m. W. of Liverpool, England. There is fine sea-bathing, and golf, and many Liverpool business men live here. Pop. with W. Kirby 27,700.

**Hoyland Nether**, tn. in W. Riding, Yorkshire, England, 3½ m. S.E. of Barnsley. There are coal mines, rolling mills, brick works. Pop. 15,200.

**Hoyle**, Edmund (1672-1769), writer on whist and other games. Of his early life nothing is definitely known, but he is supposed to have read for the law. He lived in London, giving instruction in and writing on whist; both Fielding and

Byron have alluded to him. His books include: *Short Treatise on Whist* (1742), *Backgammon* (1743), *Piquet* (1744), *Quadrille* (1745), and *Chess* (1761).

**Hradec Králové** (Ger. Königgratz), tn. of Bohemia, Czechoslovakia, on the Elbe, 65 m. E.N.E. of Prague. It is famous for its battle in 1866, in which the Prussians were victorious over the Austrians; this was known as the Battle of Sadova. Pop. 32,300.

**Hrdlička, Aleš** (1869-1943), Amer. anthropologist, b. at Humpolec, Bohemia. M.D., New York Eclectic College, 1892; New York Homeopathic College, 1894. Studied insanity, New York. Accompanied anthropological expeditions, 1898-1913, into all quarters of the world. Assistant curator of physical anthropology, U.S.A. National Museum, 1903-10; and later curator. Member, National Academy of Sciences, U.S.A. and of Czech Academy of Sciences and Arts. Huxley Medal, 1927. Wrote *Ancient Man in North America* (1907), *Ancient Man in South America* (1912), *Recent Discoveries attributed to Early Man in America* (1919), *The Anthropology of Florida* (1922), *The Old Americans* (1925). Also *Practical Anthropometry* (1920), *Skeletal Remains of Early Man* (1930), *Man from the Farthest Past*, 1930.

**Hrosowitha, Hroiwitha, Roswita, Roswitha, or Hrotsuit** (c. 935-c. 1000), Ger. poetess and chronicler. Little is known of her life, but she appears to have been a Benedictine nun of Gandersheim, near Göttingen, entering the nunnery previous to 959. Here she studied the Scriptures and the classics. Her works, written in Lat., have considerable merit, but great coarseness. They include Lat. legendary poems, six prose Terentian comedies for the entertainment of the sisterhood, of which *Callimachus*, written in praise of chastity, is the best, and a poetical panegyric chronicle of Otto I. Her works were ed. by Konrad Celtes at Nuremberg in 1501, by H. Schwizfisch at Wittenberg in 1877, and by Barrack at Nuremberg in 1888. Eng. trans. of the plays were pub. by C. St. John in 1923; H. J. W. Tillyard, 1923. See W. M. Hudson, *English Historical*, 1888; J. Schreiderhan, *Roswitha*, 1912; M. G. Wiegand, *Nondramatic Works of Hrosowitha*, 1936.

**Hrozný, Friedrich**, Czech orientalist; b. 1879, at Lysá. Has devoted attention chiefly to inscriptions in Hittite language, which he assigns to the Indo-Germanic branch. Pubs. include *Die Sprache der Hethiter* (1917), *Herhittische Keilschrifttexte aus Boghazköi* (1919), etc.; *Über die Völker und Sprachen des alten Chatti-Landes* (1920), *Code hittite* (transcription and Fr. trans., 1922).

**Hsianfu, or Singanfu**, cap. of Shensi, China, on the r. b. of the Weiho, 75 m. above its confluence with the Yellow R. (Hwangho). During the Civil war it was besieged in 1926.

**Hsiang, riv. of China**, trib. of the Yangtsiang, in Hunan; very important as connecting Kwangtung with Central China. Its W. branch is connected by canal with the Kweikiang in Kwangsi.

**Hsiangtau**, important dist. and tn. of Hunan China, where produce for Canton (300 m. to the N.) and coal for the Yangtsiang are transhipped. The Hsiang R. is navigable for junks up to this tn. Pop. upwards of 600,000.

**Hsiapaw**, see THIRAW.

**Hsüan T'ung**, last emperor of China; b. 1905 or 1906. His original name was Pu-yi; he was nephew to Kwang-shü, ninth emperor of the Manchu dynasty. His father was Tsai-Pong (Prince Ch'un); and he was selected Nov. 13, 1908, by the Empress-Dowager Tzu-Hsi, who d. Nov. 15, immediately after Kwang-shü. Prince Ch'un was made regent. The revolution that began Oct. 1911, ended Feb. 12, 1912, in the estab. of a republic. H. T. retained his title, received a handsome allowance, and was allowed to remain in the Summer Palace of Peking. In July 1917 he was replaced as ruling Emperor for a few days through the instrumentality of Gen. Chang Hsün. He married in 1922. When the Kuomintang obtained possession of Peking in Nov. 1924, they abolished his title and remaining privileges, and he went to reside under Jap. protection at Tientsin. He had cut off his queue, and called himself Henry Pu-yi. In 1934 he was proclaimed emperor of Manchukuo by the Jap. See also CHINA.—History.

**Huachou-fu**, see SU-FU.

**Huallaga**, riv. of Peru, rising in the Andes, about 10° 40' S. It flows generally northward for some 700 m. and joins the Amazon (Marañon) about lat. 5° S., 73° W.

**Huambisac**, race of S. Amer. half-breeds, belonging to the Jivaroan stock, and dwelling on the borders of Peru and Ecuador on the Upper Santiago and Marañon-Amazon rivs. The Sp. blood in them, shown by their light complexions, dates from the sack of Sevilla del Oro in 1599, when 7000 Sp. women were carried off.

**Huanavelica**, or **Guanavelica**: (1) dept. of Peru. Area 8297 sq. m. The surface is mountainous and mineral wealth abundant. Pop. 244,500. (2) Cap. of dept. of same name, and of a prov. of Peru in the Andes, 150 m. S.E. of Lima. The chief industry is the mining and smelting of gold, silver, and mercury. Elevation 11,850 ft. Pop. 12,000.

**Huangho**, see YELLOW RIVER.

**Huanuco**, or **Guanuco**: (1) dept. of Peru. Traversed by the Cordillera Oriental, and watered by the R. Huallaga. There is much mineral wealth. Coffee is grown in the dist. Area 15,426 sq. m. Pop. 231,000. (2) Cap. of the above dept., Peru, on R. Huallaga, 170 m. N.E. of Lima. It stands in a lovely and fertile valley. A bishop's see. Pop. 20,000.

**Huaráz**, cap. of Ancash dept., Peru, on the R. Huaráz, 185 m. N.W. of Lima. Elevation 10,000 ft. Pop. 20,000.

**Huasco**, or **Guasco**, seaport tn. in the prov. of Atacama, Chile, at the mouth of the Huasco R. It is the centre of a fine fruit-growing dist., is noted for its grapes and raisins and has considerable coasting trade. It is a port for mining products. Pop. about 4000.

**Huata**, Maori weapon, *see under* MAORI.  
**Hubbard, Elbert Green** (1856-1915), Amer. writer and printer, b. at Bloomington, Illinois, U.S.A. began his 'Bohemian' career as a salesman and then wrote a few poor novels. Met Wm. Morris and tried to emulate his ideas on printing, decoration and medieval design, producing at E. Aurora, New York, a shoddy imitation of the Kelmscott Press, which he named 'Rovercraft,' after the Eng. printer of that name. From this beginning he founded, and wrote the material for, an 'inspirational' monthly magazine, *The Philistine* (1895-1915), which he used to express his homely, often shrewd, platitudinous philosophy. A similar magazine, *The Fra* (1908-17)—a title which he had conferred on himself—never achieved the great popularity of the earlier pub. In 1894 he wrote *A Little Journey to the Home of George Eliot*, the first of his monthly sketches, chiefly biographical, issued in 14 vols. covering 15 years and numbering 170 booklets in all. His chief work, however, is his *A Message to Garcia* (1899)—an essay by which the Cuban lawyer and revolutionary, Calixto García (1838-98), became widely known in the U.S.A. This he followed by *Loyalty in Business* (1921). By the close of his life his Rovercraft Corporation had greatly developed become a large estab., from which he pub. besides his own books works, many artistic books, hand-illuminated and hand-bound. *See* A. Lane, *Elbert Hubbard and His Work*, 1901; and F. Shay, *Elbert Hubbard of East Aurora*, 1926.

**Huber, Johann Nepomuk** (1830-79), Ger. theologian and philosophical writer, b. in Munich, where he ultimately became univ. prof. He was leader of the Old Catholics and a bold opponent of the Ultramontanes. His works, *Die Philosophie der Kirchenvater* (1859), and *Der Jesuitorden* (1873), were placed upon the Index Expurgatorius. He collaborated with J. Dollinger in writing the celebrated *Der Papst und das Konzil von Janus* (1869). *See* E. Zimiglobl, *Johannes Huber*, 1881.

**Huberman, Bronislaw** (1882-1917), Polish violinist of Jewish origin, b. near Warsaw. Studied as a child under Joachim, who advanced his interests. In 1894, after sev. public appearances in European caps., he played in London. Made a strong impression on Brahms in Vienna in 1895. Thereafter his life was that of a famous virtuoso. The creation of the Palestine Symphony Orchestra was due to his initiative and was financed by him. D. at Vevey.

**Hubert, Saint** (636-727), patron saint of hunters (Day, Nov. 3). Hunting on Good Friday, although a holy day, he saw a cross growing out of the forehead of a stag. This he took as a sign from Heaven, became a monk, and founded an abbey. He was son of a duke of Guienne, and became bishop of Liège (Maastricht).

**Hubli**, tn. in the dist. and 15 m. S.E. of Dhartiwar, Bombay, India, has important cotton manufs. and considerable trade. Pop. 90,000.

**Hübner, Joseph Alexander, Count** (1811-92), Austrian diplomat and author, b. in Vienna. His real name was *Hafenbrell*, which he afterwards changed to H. In March 1819 he went on a special mission to Paris and, later in the same year, was appointed ambas. to France. To his influence was largely due the friendly attitude of Austria to the Allies in the Crimean war. But he was taken by surprise by Napoleon III.'s intervention on behalf of Italy, of which the first public intimation was given by the Fr. emperor's cold reception of H. (1859). He did not return to Paris after the war but in 1865 became ambas. at Rome, which post he left in 1867. He then toured the world recording his observations in *Ein Spaziergang um die Welt* (1872). His other works are *Siletus V.* (1872), *Durch das britische Reich, 1863-94* (1886), *Ein Jahr meines Lebens, 1848-49* (1891). His works, which are very interesting, show considerable insight into their subjects—whether political intrigues of the period, or Brit. colonial questions or the political ideals of Metternich and Schwarzenberg. *See* Sir E. Satow, *An Austrian Diplomatist in the 'Fifties*, 1908.

**Huo, Evariste-Régis** (1813-80), Rom. Catholic missionary, b. at Toulouse, educated by the Lazarists in Paris. In 1839 he was ordained and joined the Lazarist Mission to China at Si-Wang. In 1844 he and Joseph Gabet, his fellow Lazarist (accompanied by a young Tibetan neophyte to who had embraced Christianity), were sent into Tibet to determine the extent of the new apostolic vicariate of Mongolia. They spent some time in a lama monastery, learning the language, and in 1846 reached Lhasa after much danger and difficulty. They were, however, expelled and forced to return to China. H. returned to France in 1852 and pub. sev. books on his journey, the most famous being *Souvenirs d'un Voyage dans la Tartarie, le Thibet, et la Chine pendant les années, 1844-46* (2 vols., 1850; Eng. trans. by W. Hazlitt, 1851, abbrev. by M. Jones, 1859)—a book which contains passages of so remarkable a character as to excite incredulity; but later research seems to have confirmed all that H. wrote. Its supplement, *L'Empire Chinois* (2 vols., 1854, Eng. trans. 1859), was crowned by the Academy. *Le Christianisme en Chine* (4 vols., 1857-58), is an elaborate historical work. All his works are written in a racy and lucid style which contributed to their unusual degree of popularity. *See* Prince Henry of Orleans, *Le Père Huo et ses critiques*, 1893.

**Huch, Ricarda** (1861-1917), Ger. authoress; b. in Brunswick. Educated at Zürich; took Ph.D. degree, 1891. In 1897, secretary to State Library Zürich. Married, 1907, Richard Huch, doctor of laws. Pub. vols. of poetry; but most of her work is tales, novels, and hist. or novel-hists.; e.g.: *Aus der Triumphgasse* (1901), *Die Sommernähe* (1902), also *Geschichte von Garibaldi* (1906-07), *Das Risorgimento* (1908), *Der grosse Krieg in Deutschland* (1914), *Der Fall Deruga* (1917), *Im alten Reich* (1927-34),

*Zeitalter des Glaubensspaltungen* (1937). In literary criticism: *Blutzeit der Romantik* (1898), *Ausbreitung und Verfall der Romantik* (1902). She was a bitter opponent of the Nazis, and when Hitler came to power in 1933 she resigned from the Academy of Arts and Sciences because she refused to take the oath of allegiance to the new regime. See E. Gillischowski, *Das Schicksalsproblem bei Ricarda Huch*, 1925, and study by E. Hoppe, 1936.

**Huchtenburg**, Jan van (1646-1733), Dutch battle painter and engraver, b. in Haarlem; pupil of Thomas Wyck and later of Van der Meulen in Paris.

**Huckleberry**, see WHORLIFERRY.

**Hucknall**, formerly Hucknall Torkard, tn. in Nottinghamshire, 8 m. N.W. of Nottingham. It has extensive collieries. The body of Lord Byron was brought from Greece and buried in H. par. church, restored in 1873. Pop. 20,800.

**Huddersfield**, co. bor. in the W. Riding of Yorkshire, England, at the confluence of the R. Colne and R. Holme, 16 m. S.W. of Leeds and 190 m. from London. It is served by rail and by canals. The surrounding dist. is rich in coal and iron. H. is situated on the great escarpment of the Lower Coal Measures between two entirely contrasting types of scenery—with farming and mining vils. on the E. and S.E. and, on the W. and S. untamed moors and moorland, mostly uninhabited and rising to a height of 2000 ft. From the tn. itself the prin. eminence seen is Castle Hill (900 ft.), crowned by a tower erected to commemorate Queen Victoria's diamond jubilee. The summit is the site of an anct. Brit. encampment and is scheduled as a National Monument.

Stretching over a considerable area the bor. has the advantage of avoiding congestion. Most of the residential areas are within a mile or two from the tn., e.g. the garden suburb of Fartown and Sheepridge, the suburb of Kirkby, Kirby, and the semi-rural dists. of Crowland Manor and Almondbury. Among the chief buildings are the par. church of St. Peter, the third on the same site. The first was c. 1190, the second 1508 and the present church was built in 1836. It is in the Gothic style, the tower has ten bells and the windows are ornate with sacred scenes and emblems, notably those by Ward. There are about a score of other Estab. Churches in the tn. and immediate neighbourhood and numerous Nonconformist places of worship. The Tn. Hall and Municipal Offices are virtually one large handsome block. The Hall (which cost £57,000) is in neo-classical style and beautifully decorated. Ravensknowle Hall (with grounds), Dalton, presented to the tn. in 1919 by Legh Tolson for a museum and park, was built in 1860 by John Beaumont of Dalton. Attached to the Tolson Memorial Museum is a meteorological station. There is a Central library near the municipal offices and seven branch libraries. The old Cloth Hall was demolished in 1930 under a tn. planning scheme; parts of the original building, including the pillars, clock tower and doorway have been re-erected at Ravens-

knowle Park. There is an art gallery, containing many engravings by J. M. W. Turner. The earliest recorded date in connection with Almondbury church is March 23, 1231, when Wm. de Nuthyland was instituted rector of *Almanneburie*, being presented by John de Lacl, lord of Pontefract and Constable of Chester. The early church was in the early Eng. style, 1150-1200 and the whole was restored between 1872-77. Almondbury had a weekly mkt. as far back as the year 1272; it was discontinued c. 1672, when powers were granted to the Ramsden family to hold a mkt. in H. The foundation stone of the present mkt. hall was laid in 1873; it is built in decorated Gothic, a typical specimen of the Gothic revival; great improvements were introduced in the rebuilding after a fire in 1923. The Technical College began in 1841, in Queen Street, as the Young Men's Mental Improvement Society; the memorial stone of the present building was laid in 1881 and the name, Technical School and Mechanics Institute, changed to Technical College in 1896. In 1905 the College became affiliated with Leeds Univ.; its main depts. are chem., textile industries, civil and mechanical engineering, electrical engineering, physics, mathematics, biology, school of art, commerce and economics and domestic science. There are six secondary schools, and primary schools are distributed throughout the bor. At what is now the Huddersfield College (Municipal Boys' School) the late earl of Oxford and Asquith, then known as H. H. Asquith, received his early education, he being a nephew of a former freeman of the bor.

The main sections of local industry are textiles, engineering, cloth dyeing, shrinking and finishing, manuf. of chemicals and dyestuffs and wholesale tailoring. H. and the adjoining dists. are a natural centre of the woollen and worsted fabric industry of the W. Riding of Yorkshire. In the Colne and Holme valleys there are scores of firms, many of them old estab. individual or private enterprises, which for generations have produced textile fabrics regarded as their own specialties. In the Colne Valley are many of the larger mills which produce millions of yds. of cloths and tweeds. There are also numerous other trades carried on, notably printing and bookbinding, machine and hand tools; wood-working; sheet-metal working; furniture and cabinet making; rubber fittings; auxiliary textile equipment; brewing; patent glazing; dyeing; pottery; tanning and leather goods; boot and clog making; coach and motor body building; galvanised metal goods; brick and clay ware; aerated waters; sports requisites (especially footballs in great quantities); confectionery; hosiery yarns; gas-producing and coking by-products plant; paint; carpets and rugs; carrier bags; cardboard boxes; jams and preserves; pre-cast cement using; constructional and building industries.

**History.**—Although as a co. bor. and industrial centre H. is relatively a modern



tn., it is not entirely without historical associations. It was mentioned in Domesday Book as *Oderresfeld*, and in Subsidy Rolls, dated 1207, as *Huderesfeld*, but until the nineteenth century it certainly occupied a position secondary to that of Almondbury which is now one of its suburbs. For this reason the historical monuments and associations in the area of the tn. are comparatively few; yet there are some survivals of interest, especially the older houses in the outlying dlts. or in the tn. itself in the courts off the main streets. Almondbury, with its anct. church, stocks, par. registers and par. chests, and the old half-timbered preni es adjoining, is much richer in historical associations; so as to regard many of the other areas adjoining the tn. of H. A few miles from H. at Kirkstall is the reputed grave of Robin Hood. The old Three Nuns Hotel is said to be named through the presence of nuns at the former Kirkstall monastic estab. over which Robin Hood's sister is said to have ruled as abbess. Near by, at Cooper Bridge is the 'Dumb Steeple' commemorating the Luddite riots. At 'Lack' near Outland, excavations have revealed the remains of a former Roman camp, and similar work at Castle Hill has brought to light distinct traces of both Roman and other occupation of this hill as a watch tower, a camp and fortifications.

**Hudnall Common**, open space of over 100 ac. Situated between A-hbridge Park and Whipsnade, Hertfordshire, and noted for its hard- and flowers.

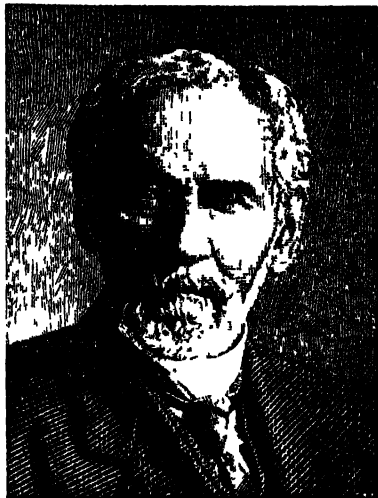
**Hudson, George** (1800-71), Eng. railway promoter, the 'Railway King,' b. at Howsham, Yorkshire. He started life as a linen draper, but in 1824 inherited a fortune of £50,000. This allowed him to interest himself in railway promoting, with very successful results, and he became the dictator of railway speculation. But the railway crisis of 1847-48 proved his ruin, for he was accused of fraud. Carlyle alluded to him as 'the big swollen gambler.'

**Hudson, Henry** (d. 1611), distinguished Eng. navigator. He was employed by the Muscovy Company, and later by the Dutch E. India Company, to discover the N.E. and N.W. passages. In 1607-10. In 1609 he explored the Hudson R. On his last voyage in 1610 he discovered the Bay and Strait which are named after him. Early in 1611 his crew mutinied, and set him and his son with seven others adrift in a small boat, and nothing further was heard of him. 'The Last Voyage of Henry Hudson' is the title of John Collier's famous and poignant picture of the doomed navigator and his crew. See C. Asber, *Henry Hudson, the Navigator*, 1860; and studies by T. A. Janvier, 1909, and L. Powys, 1928.

**Hudson, John** (1662-1719), Eng. classical scholar, who ed. anct. writings. He graduated at Univ. College, Oxford (1681), later became Fellow, and in 1701 was appointed keeper of the Bodleian Library. Also Prin. of St. Mary Hall, Oxford.

**Hudson, William Henry** (1841-1922), field-naturalist and author; b. in Rio de

la Plata State, Buenos Aires—now absorbed in Argentina; son of Daniel H., native of Marblehead, Mass.; and grandson of Daniel H., native of Exeter, England. The early part of his life was spent on an estancia of the Argentine pampas. He left S. America, 1869, and thenceforth resided in England. His wife, a musician (d. 1921), was much older than himself: they lived in various houses in London, went on long gipsy-like journeys into the country, and were sometimes in want. In 1901 H. was granted a Civil List pension, which he relinquished when his circumstances improved. H. 'writes as the



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writer grows.' He saw life as an immense and complex flow of creativeness, and in depicting nature and especially bird life, he evolved a style that has been a model for this century. His observation combined scientific detachment with intense intuitive perception. 'Few men have left a monument more permanent than Hudson left in his own books,' wrote Cunningham Graham. His works, which fall roughly into the two categories of S. America and Eng., include *The Purple Land which England Lost* (i.e. Uruguay, 1885), *A Crystal Age* (satire on peaceful Utopias, 1887), *A Naturalist in La Plata* (1892), *Idle Days in Patagonia* (1893), *British Birds* (1894), *Nature in Doonland* (1900), *Birds and Man* (1901), *El Ombú* (1902), *Hampshire Days* (1903), *Green Mansions* (1904), *A Little Boy Lost* (1905), *The Land's End* (1908), *Afoot in England* (1909), *A Shepherd's Life* (1910), *Far Away and Long Ago* (1913), *Birds of La Plata* (1920), *Dead Man's Black and An Old Thorn* (stories in 1 vol., 1920), *A Traveller in Little Things* (sketches, 1931),

*A Hind in Richmond Park (1922).* Ho d. in London and is commemorated by the Bird Sanctuary with Epstein's 'Rima' (after the bird-woman 'Itolamoo' in *Green Mansions*) in Hyde Park. See life by M. Roberts, 1924. See also F. Ithys, W. H. Hudson, *Rare Traveller*, 1920; R. Charles, *The Writings of Hudson*, 1935.

Hudson, cap. of Columbia co., New York, U.S.A., on Hudson R., 28 m. S. of Albany. It has a large riv. trade and numerous manufs. of engines, paper, leather, flour, clothing, knit goods, tobacco. Founded in 1783, and formerly a whaling port. Pop. 11,500.

Hudson, tn. of Middlesex co., Massachusetts, U.S.A., on Assabet R. 15 m. N.E. of Worcester. It has manufs. of leather, rubber shoes, webbing, gas-amers, paper boxes, lasts, etc. There are wool scouring and combing mills. Pop. 8,000.

Hudson, riv. of New York, U.S.A. Rises in the Adirondack Mts., and flows about 350 m., roughly, in a southerly direction, into New York Bay. Its estuary, known as N. R., forms part of New York Harbour. It is navigable for small boats up to Glen Falls (200 m.), for small steamers to Troy (151 m.), and for large steamers to H. (117 m.). Much of the scenery on its banks is very fine, especially in the highlands of the H., part of the Appalachian Range, below Newburgh. Chief tribes, the Mohawk, Wal-kill, Hootic, and Sacandaga. It was first explored by Henry Hudson in 1609, and the first successful Amer. attempt at steam navigation was made upon it in 1807.

Hudson Bay, or Canadian Sea, inland sea of the N.W. of N. America, communicating with the Atlantic Ocean by Hudson Strait and with the Arctic Ocean by Fox Channel, Fury and Hecla Strait, and the gulf of Boothia. It lies entirely in Brit. ter., having Manitoba on the W., Ontario on the S., and Southampton Is. on the N. A long narrow arm in the S. is known as James Bay. Area about 500,000 sq. m., length 850 to 1300 m., greatest width 600 m. It occupies a basin in the old Laurentian area, and is mostly shallow, with low shore-lines, especially in the S. and W. The average depth is 70 to 100 fathoms. The E. shores are rocky, and steep bluffs occur here and occasionally in the W. A chain of small is. lies off the E. shore. There are few submerged rocks or shoals, but ice renders navigation impossible for three-fourths of the year. The climate is very rigorous in winter, but mild and pleasant during the short summer. The bay is the great drainage area of the Canadian N.W. Ters., and is fed by the Rs. Churchill, Nelson, Albany, Main, Rupert, Severn, and Moose. There are fisheries of salmon, seal, whale, and walrus, and the surrounding country is rich in minerals and fur-bearing animals. York Factory is the chief port. The bay was discovered by Henry Hudson in 1610. He wintered in James Bay, and the next year was abandoned by his mutinous crew. See F. H. Kitts, *The Hudson Bay Region*, 1929.

Hudson's Bay Company, Eng. chartered company incorporated by Charles II. in 1670 and founded by Prince Rupert and other adventurers for the purpose of trading with the N. Amer. Indians on the shores of Hudson Bay. The estab. of the Amer. fur trade seems to have been due to the demand in the European mkt. for large felt hats adorned with fur which became the vogue from the time of Charles I. In the search for the N.W. Passage Henry Hudson, by discovering the bay which is named after him, had found a route to the very edge of what is the greatest fur forest in the world. But Hudson died without being aware of what he had accomplished. It remained for the Sieur Médard des Groseillers and his brother-in-law, Pierre Radisson, and through them the founders of the H.B.C., to reveal the value of his discovery for the fur trade. The first achievement of Groseillers, an Indianised Frenchman, was to penetrate to the Great Lakes and induce the Hurons to bring furs down to the St. Lawrence. It was then that he found that the Cree of the great N. forest were the real source of the fur supplies which reached the Fr. in the S. The Fr. governor refused to issue to Groseillers a licence to journey thither, except on the condition that he received half the profits. Groseillers and Radisson therefore went independently and returned (c. 1663) with a great supply of furs and were then charged and fined for illicit trading. Failing to obtain redress in France the two men repaired to Boston to visit Sir George Carteret, Privy Councillor to Charles II. and through him they ultimately reached Windsor as guests of the king, who was equally interested in their proposals for a trading expedition in N. America beyond the confines of England's Amer. colonies. But progress was slow, and it was not until 1667 that Prince Rupert, the king's cousin, took up the project, with the co-operation of the duke of York (afterwards James II.) the duke of Albemarle, the earls of Arlington, Craven and Shaftesbury, Sir George Carteret and James Hayes, secretary to Prince Rupert. All these were the original subscribers to the initial cap. of about £110,000 and the company's hist. really begins at that date, when a converted ketch, the *Nomach*, with Groseillers, sailed for N. America, reaching James Bay on Sept. 29, 1668. The king loaned the naval boat *Engel* which sailed with Radisson, but at Hudson Strait the *Engel* was too damaged to proceed further. In St. James's Bay Groseillers then built Fort Charles—really only a poor log hut with a stockade, yet veritably the cornerstone of a great trading empire. Groseillers (called Mr. Gooseberry by the Eng.) soon sailed again with the *Nomach* laden with furs. This successful voyage confirmed the hopes of the frontier adventurers, who now applied to the king for a Royal Charter. This was granted on May 2, 1670. Wide imperial powers were conferred on 'the Governor and Company of Adventurers of England Trading into Hudson's Bay.' Rights to 'sole trade

and commence' within the entrance of Hudson Strait were bestowed by Charles upon 'our dear and entirely beloved cousin Prince Rupert' and his associates, who, according to the Charter, were to be 'the true and absolute Lordes and Proprietors' over more ter than was then even known to Europeans. In present-day geographical terms, the Adventurers were granted the Prov. of Ontario and Quebec N of the Laurentian Hills and W of Labrador boundary all Manitoba and Saskatchewan, the S half of Alberta and the S E corner of the N W T's. It proved to be a well drafted Charter for it successfully resisted all attacks on its validity in the law courts. The F in Quebec and Montreal soon took up the challenge of the Ing cnty into the Amer fur trade from the N and for nearly a century the Ing and Fr. struggled for the trade, in a long drawn period of war, with intervals of peace, lasting till 1713 — these intervals being accompanied by outbreaks of violence on the shores of the bay. These were for the most part mere forest skirmishes, insignificant as measured in terms of military operations, but they were significant in the hist of Canada, and the fact that the company defended Ing interests for so long served the Company in good stead w the Charter Rights came to be considered by a Parl Committee in 1749.

By 1680 there were forts at Rupert R., Moose, and Albany, factories in James Bay, and Fort Nelson (or York Factory) on the W coast of Hudson's Bay. Several of these were taken by the Chevalier de Troyes and in 1697 as the result of a sea fight when the Sieur d'Iberville's ship *Pelican* off York Factory defeated three Eng ships under Captain Bailey who was in command for the company. The company was then left with but a single post on the bay, Albany factory. The Treaty of Ryswick brought peace to Hudson's Bay but it left the company almost ruined. Two notable names in the hist of the company at this period were those of Henry Kelsey, who entered as an apprentice in 1684 and undertook a journey into the prairie lands, and James Knight, who was one of the first to establish discipline both within the forts and in the relations with the Indians. Kelsey is notable as the first of the company's servants to establish that understanding, which was to prove the most powerful factor in the development of the fur trade in Canada. His *Journals* became the subject of political and later historical controversy which was only finally cleared up in 1926. From 1697-1713 (Treaty of Utrecht) the company's sole post on the Bay was Albany. The duke of Marlborough, whose victories culminated in the Treaty of Utrecht, had been a governor of the company. The Treaty brought the bay forts back to the company and thereafter the company was to have nearly seventy years of peaceful trading. In 1715 Knight sent Wm. Stewart into the interior as an arbitrator of peace with the Indians, notably the Crees. Knight built a post N. of York

Factory at the mouth of the Churchill R. to enable the Chipewyans from Great Slave and Athabasca Lakes to bring furs to the bay. Thus was Churchill (then called Prince of Wales's Fort) established.

Meanwhile the Fr. through Pierre de Varennes, Sieur de Vérendrye, renewed attempts to secure part of the fur trade, W of the Great Lakes, and set up a number of trading posts in the W Prairie, a challenge to the charter and rights of the H B C. From 1754, therefore the company's servants began to penetrate the W. Thus, Anthony Henday travelled for a year with Indians, going as far as the Rockies. A notable name in the company's annals of this period was that of Samuel Hearne, who began as mate in a company whaling ship and later (1776) was stationed at Prince of Wales's Fort on Churchill R., a stone fortress which had replaced Knight's wooden fort on Churchill R. Hearne was the first white man to reach the Arctic Sea from the interior, having reached the mouth of the Coppermine R. This stone fort had only been completed in 1771 after nearly forty years labour but in 1782 Hearne, the governor, surrendered it to La Perouse without firing a shot — he having only thirty nine men in the garrison. The Fr. attempted to blow up the fortress without success. The main walls of this very strong fortress survive as an historic site owned by the Dominion of Canada.

It was about the year 1784 that saw the dawn of the historic rivalry of the N W Company, which was destined to become the strongest of all the H.B.C.'s competitors. This competition was in effect that of the Hudson Bay and the Montreal routes for the trade of the great fur forest. Brit subjects in Montreal following La Vérendrye's precedent, built posts among the Indians and again directed trade into the Montreal route. In 1774 the H.B.C. replied by building Cumberland House, near the Saskatchewan R. Among the well-known names of the pioneer traders of the N.W. Company were those of Krobisher, Alexander Mackenzie, McKay, McLoughlin, all courageous and enterprising Scottish-Canadian traders from Montreal, who pushed their activities across the Prairie and the Rockies into the Arctic Ocean in defiance of the monopoly rights of the H.B.C. Forts were built in juxtaposition at trading points but before the two companies were merged in 1821 there was to be violence and bloodshed, arrests and mitigation. It was Alexander Mackenzie, most famous fur trader of his time, who first went up the Peace R. (1793), was knighted after the pub of his *Voyages* and produced a plan for the union of all the fur trading interests in one great chartered company having the use of the Hudson Bay route and he tried to buy out the H.B.C. through Lord Selkirk, who then controlled the company. But Selkirk co-operated with Andrew Wedderburn (Andrew Colvile) in reorganising the company by launching his Red River Colony Scheme (1812). This colony was taken over by the H.B.C. in 1836, with a

form of government in harmony with the company's charter—a governor and council appointed by the governor and committee in London. The union of the two companies was accomplished by a deed of co partnership and thus developed into the union, which eliminated wasteful competition. By this union the trade enjoyed the use of the route through Hudson Strait and the company's title to the soil was recognised by all parties. Thus the company entered upon a great period of its history, which was to continue till the transfer of Rupert's Land to the

British America, became the dominant body of the whole structure of Canada. It established the regulations for the fur trade, applied discipline and recommended promotions. It was a structure unique in commercial history, combining trading rights with a sovereignty under the British Crown. Simpson was administrator for forty years following the union of the two companies. The rigid discipline which he imposed on the fur trade in the colonies for him but his mastery of every detail of the company's affairs and his wide imagination especially in the field of



Reproduced from the *Journal of the Governor and Committee of Hudson Bay Company*  
THE COMPANY'S POST AT CAPE WOLFENSDALE, HUDSON BAY  
(THE OUTLET TO HUDSON STRAIT)

Dominion of Canada. In 1821 Parliament passed an Act affirming for the monopoly of the regions described as the N.W. Territory to be given to any company undertaking to fulfil certain conditions. The licence conveying the monopoly was given to the united company subject to the Treaty with America of 1818 which gave Americans equal rights for the W. of the Rockies. The empire over which the company now held administrative as well as trading powers included all modern Canada except the Great Lakes basin and the Maritime Provinces. The company's executive control was in London with the governor, deputy governor and committee, representing the shareholders or 'proprietors' as they are still called. Under Sir George Simpson who was appointed governor in chief of Rupert's Land, the council of the N. Dept. of Rupert's Land, one of the four great depths into which the company divided

exploration and hunting the greatest of all fur traders.

In the time of the N.W. Company the Americans began to acquire rights in the region of the Columbia River. The N.W. Company bought out the Astor Pacific Fur Company which had established posts within the mouth of the river and up to Kamlay. But both countries claimed the sovereignty of the land. An agreement was arranged in 1818 by which each nation recognised for ten years the other's right to trade. It was renewed in 1827 and continued in force until the Oregon Treaty of 1846. Dr. John McLoughlin, known to Americans as the 'Father of Oregon' ruled the Columbia district (on the Pacific coast) under Simpson with wide powers. He severed his connection with the company and became an American citizen when his vast domain became part of the Republic. James Douglas, who established Victoria and combined the offices

of chief factor and colonial governor, carried on McLoughlin's work and later became governor of the crown colony of Vancouver Is and of Brit Columbia. It was after the Oregon crisis and Treaty colony on the Is of Vancouver and the task of founding the colony was assigned to the H B C by a grant dated Jan 13 1849 which the company did by offering the land on terms which could be attractive to none but Englishmen desiring to be gentlemen farmers. Following American charges against the H B C of maladministration designed to break the company's monopoly, there was an inquiry by a parliamentary committee (15 7) and it was as a result of this inquiry that Vancouver Is was made a crown colony. Sir George Simpson was one of the principal witnesses at the inquiry, and among the members of the committee were Wm Ewart Gladstone Lord Stanley and Lord John Russell. Celebrated explorers and travellers, including John Ross, Col Lecky Sir John Richardson, and Dr Rae were among other witnesses, and the committee's report, which was adopted by parliament, found that Canada's wish to assume the land of the W for settlement was reasonable and that arrangements should be made for their cost. Canada and that where settlement was impracticable, the H B C should remain in control.

Thus the end of the company's monopoly was in sight. Sir George Simpson died in 1860 but the company carried on as rulers of the W under the crown until 1869. When Confederation became a political reality it was evident that the end of the company's administration of Rupert's Land was approaching and provision was made by the British America Act of 1867 (clause 146) for the admission of that ter (then the company's land) and the N W Ter (crown domain) into the Confederation. The Rupert's Land Act of 1868 laid down the procedure. Under the ensuing agreement (Canada) paid £300 000 as compensation and one twentieth part of the land in any township settled within the fertile belt. By the Decd of Surrender of 1869 the Company did not give up its Royal Charter but only certain of its trading privileges. The final transfer of land to the company under this deed was not completed until 1921 or fifty six years after the date of surrender, under which the company was allowed the privileges of a private trading corporation without hindrance or exceptional taxation. The Decd brought to the company an area in the fertile belt of seven million acs. Its land grew up in many of the fur trading areas and the company's posts in numerous places have become departmental stores. By 1934 2,000 000 acs (cultured through Manitoba, Saskatchewan and Alberta) remained unsold. The Land Dept of the company administers this huge estate which includes extensive lots in city areas. The company's title to the land it offers for sale is direct from the crown and is therefore guaranteed by the Prov. and Dominion Govs. By 1869, indeed,

the charter of 1870, which had served its purpose for 200 years, had outlived its time. In 1863 the International Financial Society had secured enough stock to control and reorganise the company and up to 1920 there had been five supplemental charters regularising changes in dealings with the company's stock and reflecting the actual business carried on by the company. With the outbreak of the First World War the H B C was called upon to engage in activities far greater than at any time during its history, including *e.g.* the organisation of steamship services for the transport of goods to France and during 1915 it handled some 13 000 000 tons of supplies and operated over a million tons of shipping.

On the other hand, the Hudson's Bay Company continues to conduct its business under a Royal Charter and is therefore exempt from the provisions of the Companies Act of Great Britain. A governing deputy governor, and committee (or board of directors) have direct control of the company's affairs in unbroken continuity since the incorporation. Today this executive group of nine is elected by the proprietors at the annual general court. The Board meets regularly in Hibernia Bay House, London, adjoining which is the church of St Ethelburga the Virgin within Bishopsgate (c. 1400-1410) where Henry Hudson received confirmation on April 13, 1607 shortly before sailing on his first voyage of discovery. Since 1961 the company's affairs in Canada have been under the administration of a Canadian committee. For that time the committee served in an advisory capacity. The Canadian committee is responsible to the governor, deputy governor and committee. It meets in Hibernia Bay House, Winnipeg, where it maintains its offices, as a central organization in Canada. Hudson Bay House, Winnipeg is also the headquarters of the former Canadian Dept. of the company—the Fur Trade Transport Land and Boat Stores. (See *Hudson's Bay Company's Brief History* issued by Hudson Bay House, London, 1934.)

1 Mackenzie's Voyages from M to real  
 2 the River St. Lawrence, Through the  
 3 cent of North America to the Frozen  
 4 in and the Pacific in the years 1789 and  
 5 1801 W. Livingstone Astoria, or  
 6 the Great Pacific Northwest, or  
 7 the Pacific Northwest, or the Oregon  
 8 Territory and British North America Fur  
 9 Trade, 1844 A. Simpson, The Arto  
 10 tics of Thomas Simpson, The Arto  
 11 iscoverer 1841 Sir G. Simpson,  
 12 Narrative of a Journey Round the World  
 13 During the Years 1841 and 1842, 1847  
 14 A. Ross, Fur Hunters of the Far West,  
 15 1856 and The Red River Settlement, Its  
 16 Past Progress and Present State 1856;  
 17 J. Milton and W. C. Calk, The Northwest  
 18 Passage by Land 1856 A. Begg, The  
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 20 B. Kles, The Great Company, Being the  
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 23 son's Bay, 1900 F. V. Holman, Dr  
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**Hudson Bay Territory**, see NORTH-WEST TERRITORIES.

**Hué**, fort. tn., is the cap. of Annam, Fr. Indo-China. It is on the Hué R., 10 m. from its mouth, and carries on considerable trade through Thuanan. It is surrounded by a wall and moat, and contains an old palace. It was at H. that the treaty establishing a Fr. Protectorate was signed, Feb. 23, 1886. Fr. troops occupy part of the citadel (called Mang-Ca) of H. There are normal and secondary schools. In the revolutionary disturbances in Indo-China which followed the capitulation of Japan (1945) H. was a centre of Viet-Nam revolt, the Court of H. having sealed its own doom during the world war by rallying to the Jap. The Fr. garrison of H. was attacked at the end of 1946 but gradually, with the arrival of reinforcements, the Fr. gained the upper hand. Pop. 15,000.

**Hue and Cry**, old phrase derived from the method of pursuit of felons by the general public, as provided for in common law. Also the title of a gazette containing the names of deserters, persons charged with crimes, etc. pub. in 1710.

**Hueffer, Ford Madox**, see FORD, FORD MADOX.

**Hueffer, Francis** (1845-89), musical critic, b. at Münster Westphalia; educated at Göttingen. In 1882 he was naturalised as a Brit. subject. In 1886 he became

editor of *The Musical World*, and musical critic to *The Times* (1879). He was the apostle of Wagner in England, and pub. *Richard Wagner and the Music of the Future* (1874), *The Troubadours* (1878), etc. In 1888 he issued a trans. of the *Correspondence of Wagner and Liszt*.

**Huehuetenango**, tn. in the dept. of Guatemala Central America, is the cap. of H. dept., 106 m. N.W. of Guatemala. It is the centre of a lead-mining dist., and quite near are the ruins of an old Indian city. Pop. 10,000.

**Huelva**: (1) Prov. of Andalusia, Spain, bordering on Portugal and the Atlantic Ocean. Area 3906 sq. m. Much of the surface is occupied by the Sierra Morena, and it is watered by the Lepe, Odell, and Tinto Rs., and tribs. of the Guadiana and Guadalquivir. There are rich deposits of iron and copper pyrites, and valuable mineral waters, while some dists. are very fertile. Pop. 374,200. (2) Cap. of above prov., on the estuary of the Odell and Tinto Rs., 49 m. S.W. of Seville. The harbour is large and safe, but the entrance is partially blocked by a bar. There is a large export trade of metallic ores and agric. produce. Pop. 58,000.

**Huercal Overa**, or **Huercal Overa**, tn. in Spain in the prov. of, and 40 m. N.E. of, the tn. of Almería, is near an important mining dist. and has considerable trade in agric. produce. Pop. 16,367.

**Huerta, Adolfo de la**, was governor of the Mexican prov. Sonora when it seceded, April 1920. When revolution displaced Carranza on April 23, H. became provincial president of Mexico; confirmed in office (after Carranza's assassination) May 24. He was only a stop-gap—Obregón being inaugurated in Dec.

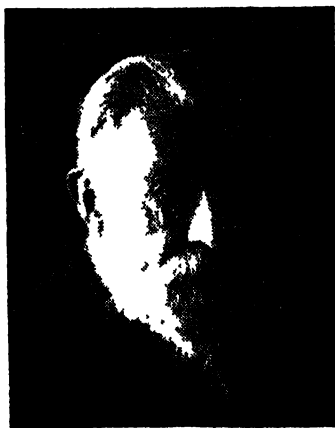
**Huerta, Victoriano** (1854-1918), Mexican president and generalissimo, b. at Colotlan of Indian parents. Educated in the Military College, Mexico City, as a result of the interest taken in him by Juárez the Mexican President. Became a lieutenant of Engineers in 1877, after a most successful career in the College. On active service in various parts of Mexico 1878-1912, being promoted to the rank of general in 1901. His prin. service during this period was to suppress the Chihuahua rebellion in 1912. Made military commandant of the Federal Dist. in Mexico City in 1913. When Lascurain resigned, Huerta became Interim President. At this time the ex-President Madero, who was awaiting trial for treason, was, together with Suarez, the ex-Vice-President, murdered while being conveyed to the Penitentiary. For this act, which may or may not have been instigated by him, H. incurred the utmost odium throughout the U.S.A. and his protracted conflict with America may be said to have begun from that date (Feb. 1913). Gen. Carranza aided by Gen. Villa, headed rebellious against him after he had been confirmed in office. No efforts on the part of President Wilson at mediation were successful in reconciling the insurgents with H., whose ruin was completed by his own folly in repudiating the National Debt and thereby precipitating a state of

anarchy and disorder which was only remedied by active Amer. intervention. He resigned in the summer of 1911, just before the beginning of the first World War, in which the only part he played was to endeavour to lead a revolutionary force into Texas.

**Huesca**: (1) Prov. of Aragon, N. Spain, bounded on the N. by France and on the E. by the prov. of Lerida. Area 5819 sq. m. Pop. 224,500. (2) Cap. of the above prov. on R. Isuela, 45 m. N.E. of Saragossa. It is picturesquely built on a height above a fertile valley. The Romans knew it as Osca, and Sertorius was murdered here in 72 B.C. The town was important under the Arabs and the kings of Aragon, and part of its old walls still remain. Among the notable buildings are the Gothic cathedral (1300-1515), the univ. (1354), and the auct. palace of the kings of Aragon, where the 'Massacre of the Bell' occurred in 1136. Pop. 11,600.

**Huescar**, city in Spain, 68 m. N.E. of Granada. Manufs. woollen fabrics. Pop. 8300.

**Huet, Pierre Daniel** (1630-1721), Fr. scholar and churchman, b. at Caen. In 1652 he visited the Swedish Court in company with Bochart, and discovered at Stockholm the famous Origen MS., which he ed. in 1668. In 1670 he and Bossuet were appointed tutors of the Dauphin, and prepared an ed. of the classics for their pupil's use. He took orders in 1676; became abbot of Aunay (1678), bishop of Soissons (1685), bishop of Avranches (1692), and abbot of Fontenay (1699). In 1701 he settled in the Jesuit College in Paris. His works include: *De Interpretatione* (1661), a collection of poems (1664), *Demonstratio Evangelica* (1679), *Traité de la Faiblesse de l'Esprit Humain* (pub. posthumously, 1923), etc.



BARON VON HÜGEL

**Hügel, Baron Friedrich von** (1852-1925), Catholic religious writer; b. at

Florence. His father was Baron Karl von H. and his mother was Scottish. Baron Karl was Austrian minister at Brussels, 1860-67. Friedrich was never at school or univ.; an attack of typhus in 1871 left him deaf. He received instruction from the historian Reumont, was influenced by Abbé Huvelin and W. G. Ward. He became naturalised subject of Great Britain during the first World War. He was foremost Catholic scholar in England of his time, after Lord Acton. Although at one time suspected of Modernism and certainly liberal in thought, he was nevertheless loyal to the church, his whole life and practice being inspired by her teaching and doctrine. Everything he did was 'to be in the mind of the church.' Works include: *The Mystical Element in Religion* (1908-09), *Eternal Life* (1912-13), *The German Soul*, etc. (1916), *Essays and Addresses on the Philosophy of Religion* (1921). See B. Holland (ed.) *Selected Letters of Hügel*, 1927; Gwendolen Greene (ed.) *Letters to a Niece*, 1928; Algar Thorold (ed.) *Readings from Friedrich von Hügel*, 1928.

**Hugglescote**, par. in Coalville urb. dist., 6 m S.E. of Ashby-de-la-Zouch, Leicestershire. It has collieries. Pop. 6500.

**Hughenden**, or **Hitchendon**, par. in Buckinghamshire, 1 m. N. of Wycombe. H. Manor was the residence of Disraeli. He was buried in the par. church which contains a monument to him erected by Queen Victoria. Pop. 2500.

**Hughes Capet**, see CAPET, HUGHES.

**Hughes, Charles Evans** (1862-1948), Amer. lawyer and statesman, b. at Glen Falls, New York, son of Rev. David Charles H. Educated at Colgate and Brown Univs., and the Columbia Law School. He was prof. of law at Cornell Univ., 1891-93. In 1905 he won prominence as the attorney for the Armstrong Legislative committee, which investigated the methods of the life insurance companies incorporated under the laws of New York. H. became the inevitable candidate of the Republican party for governor of New York. He was duly nominated in 1906, and the Democrats nominated W. R. Hearst, the newspaper proprietor. H. was elected, and re-elected in 1908. In 1910 President Taft appointed him an associate Justice of the U.S. Supreme Court. In 1916 the Republican party again nominated him and he at once resigned from the U.S. Supreme Court and began a vigorous campaign. On the night of the election on Nov. 7 it was found he had carried the whole of New England except New Hampshire, New York, New Jersey, Indiana, and Illinois. It was assumed that H. had been overwhelmingly elected; but the far W. states were still voting, and the W. was doubtful because of the Democratic slogan about Wilson—'He kept us out of the War.' For several days the real result of the election hung in the balance. The presidency now hung upon the results in California. Wilson was finally found to have carried California by a little less than 4000, and was therefore duly re-elected President. He had lost his great opportunity through the

failure of his managers to mend the breach in California, but even in other parts of the country he did not obtain the support that had been expected. He then returned to the practice of the law in New York, where, upon the United States' entry into the war, he acted as member of the draft appeal board and took charge of an inquiry into aircraft. In 1921, when President Harding held the reins of gov., he made H. secretary of state. The most notable event of his term was the arms conference held in Washington in Nov. 1921. As president of that conference he did much to bring about an agreement that led to a closer understanding between the United States and Great Britain. There was also the four-power treaty between the U.S.A., Great Britain, France, and Japan regarding their possessions in the Pacific, and the cancellation of the Anglo-Jap. alliance. H. held on as secretary of state for a time under President Coolidge and then resigned to resume the practice of law. He was Judge of the Permanent Court of International Justice, The Hague, 1923-30; President of the Amer. Society of International Law, 1925-29; and Chief Justice of the United States, 1930-11. An impartial judge he found himself compelled, like his associates, to declare invalid and unconstitutional a great number of the laws passed by Congress at the instance of President Franklin Roosevelt as parts of the 'New Deal.' He pub. *The Pathway of Peace* (1925), *The Supreme Court of the United States* (1929), and *Pan American Peace Plans* (Yale Univ. Lectures, 1929).

**Hughes, David Edward** (1831-1900), Anglo-Amer. inventor, b. in London; went to Virginia in 1847; in 1850 became Prof. of music at Bard-town College, Kentucky. His inventions include an improved telegraph type-printer (1854-55), and the microphone (1878), which was produced almost simultaneously by Luitge. He was made F.R.S. in 1880, gold medalist of the Royal Society in 1883, vice-president of the Royal Institution in 1891, and Albert medalist of the Society of Arts in 1893.

**Hughes, Sir Edward** (c. 1720-94), Eng. admiral, b. at Hertford and entered the navy, 1733. He assisted in the attacks on Cartagena and at the taking of Louisbourg and Quebec. He became commander-in-chief in the E. Indies, 1773. During 1782-83 he had five encounters with the Fr., and was made admiral in 1793.

**Hughes, Hugh Price** (1817-1902), Welsh Wesleyan minister, b. at Carmarthen, educated for Wesleyan Methodist ministry at Richmond College. In 1884 he became prominent in London at Brixton Hill as a leader of the 'Forward party,' and in 1886 started the W. London Mission. In 1885 he became editor of the *Methodist Times*, in 1896, first president of the National Council of the Evangelical Free Churches, and in 1899 president of the Wesleyan Methodist Conference. See life by his daughter, 1904.

**Hughes, John** (fl. 1869). Welsh iron and shipbuilding master. After his apprenticeship in Ebbw Vale, Wales, he

estab. a factory at Newport. Then directed a Millwall iron and shipbuilding yard and made the Millwall shield, a resistant armour which interested Russia. Toured the Russian mines, and, in 1869, founded a company to supply all Russian railways with iron. Before the 'Hughes works' were set up with 3000 men employed, there had been a vast stoppage with primitive peasants and 'tchumaks' or carriers driving bullocks for grain transport. The H., father and sons, came to the Don country, which then soon outstripped the trials of those days with many iron-works. The centre was named Hughesovka or Yuzovka. This fn. ultimately was renamed Stalino (*q.v.*).

**Hughes, John** (1677-1720), Eng. poet b. at Marlborough, Wiltshire, and educated in London. He became a clerk in the ordnance office. He was delicate, and suffered much from poverty till his appointment as secretary in the Court of Chancery. His best work, *The Sack of Damascus* was produced at Drury Lane Theatre (1720), but he died the same evening from consumption. Besides his poems, he wrote a *History of England* (1706), *The Works of Mr. Edmund Spenser* (1715), and contributed to sev. periodicals. See S. Johnson in *The Lives of the Poets*, vol. II., 1781.

**Hughes, Richard Arthur Warren** (b. 1900), Welsh author. Educated at Charterhouse and Oriel College, Oxford. Earliest work was *The Sister's Tragedy* (play) and *Gipsy-Night* (and other poems) both pub. in 1922. These were followed by *A Comedy of Good and Evil* (1925) and *Confessio Juvenis* (collected poems) (1926). H. was the first dramatist to write specially for broadcasting and he has been associated with the Welsh National Theatre. He is, however, best known for two novels: *A High Wind in Jamaica* (1929) and *In Hazard* (1933); the first-named being a story of some children who fall into the hands of modern pirates, notable for its original narrative style and for its convincing interpretation of child mentality; the second, a vivid story of a ship's adventures in a hurricane. Other works: *A Moment of Time* (short stories, 1926), *Collected Plays* (1928), *The Spider's Palace* (stories for children, 1931), *Don't Blame Me* (1910), *City of Angels* (1941), and *Her Fabulous Fortune* (1943).

**Hughes, Sir Sam** (1833-1921), Canadian general; b. at Darlington, Ontario. Educated: Toronto, Normal School and Univ. In S. African War he was Assistant Inspector-general of communications; afterwards chief intelligence-officer to Sir Chas. Warren. In 1911 he was appointed minister of militia and defence; and he had a great deal to do with preparation of Canadian force that fought in the First World War. K.C.B. and major-general, 1915.

**Hughes, Thomas** (1822-96), author, began life as a barrister and a follower of Frederick Denison Maurice and other leaders of the Christian Social School. He was a founder of the Working Men's College, and prin. of that institution from



1872 to 1883. He sat in Parliament from 1866 to 1874, and was a co. court judge from 1882. The author of sev. books and many tracts and essays, his fame rests entirely upon *Tom Brown's School Days*, pub. anonymously in 1877. It is a simple story of public-school life, admirably presented, and underlying it is a strong, sound religious sense, that had the greater influence for not being unduly obtruded. See M. L. Parrish and B. K. Mann, *Charles Kingsley and Thomas Hughes*, 1936.

Hughes, William Morris (b. 1861), Australian statesman; b. in Montgomeryshire, Wales. Educated: Llandudno Grammar School; St. Stephen's church school, Westminster. Emigrated to Australia, 1884. Worked as farm hand, coasting sailor, labour organiser. Member of Parliament since its estab. in 1901. Called to N.S.W. Bar, 1903. Minister for external affairs, 1904. Attorney-general, 1908-09, again, 1910-13; and again 1914. Fisher resigned premiership in 1915, and H. took his place. He visited England, then in the turmoil of war, in 1916, was made P.C., and preached an imperialism little to the taste of the Brit. Labour Party. He had become essentially a war-premier, failed to carry conscription, fell out of favour on the coming of peace, had to resign in 1923, and in 1929 began forming a new group called the 'Australian party'. In that year he pub. an evan gel of empire called *The Splendid Adventure*. Joined the Commonwealth Gov. as vice-president of the executive council, 1931-3; and again in 1937-38. Minister of health and repatriation (Lyons Gov.), 1931-3; 1936-37; of external affairs, 1938-40; attorney-general and minister for industry, 1940-41; minister for the Navy, 1941-44.

Hughesovka, see STALINO.

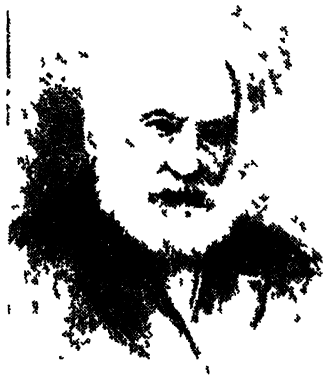
Hugh of Lincoln, St. (1. c. 1135-1200), bishop of Lincoln, b. at Avalon, Burgundy, of noble parentage, entered the Grande Chartreuse about 1160, and became bursar there. Rose to the office of procurator which brought him into touch with the outer world; and about 1175 he was invited to England by Henry II., to estab. at Witham, Somerset, the first Eng. Carthusian monastery. In 1186 he became bishop of Lincoln; in 1189 went on an embassy to France; in 1194 excommunicated King John, and in 1198 led the first refusal of a money grant. He was canonised in 1220. The chief life of St. H. is the *Magna Vita S. Hugonis* (in Mss. in the Bodleian Library), written by Adam, private chaplain to St. H. See also Canon Perry's *Life of St. Hugh of Avalon*, 1879; and life by Marson, 1901. (2) (c. 1246-55), Eng. Christian child who is traditionally alleged to have been at the age of eleven crucified by a Jew of Lincoln, named Copin, after having been tortured and starved on account of his faith. His body was buried near that of Grosseteste in Lincoln Cathedral. The story of his martyrdom was a favourite one with Eng. ballad-makers and chroniclers. It is the theme of the 'Priores's Tale' in Chaucer's *Canterbury Tales*, and is also referred to by Marlowe.

Hugh Town, tn. and cap. of the Scilly Is., Cornwall, on St. Mary's Is.

Hughl, Hooghly, or Hoogly: (1) most westerly and most important of the mouths of the Ganges, India, formed by the confluence of the Bhágrathi, the Jalangi, and the Murmá streams. Its length is about 200 m., and it is about 10 m. wide at the mouth. It is the only mouth of the Ganges navigable by large vessels, which can safely go up to Calcutta. Navigation is, however, much hindered by silting and the formation of sandbanks. The 'bore' is often of great height and velocity. The H. is held sacred by the Hindus. (2) Cap. of dist. of same name, W. Bengal, India, on R. H., 23 m. N. of Calcutta. The chief building is the Inambarra, a Muslim institution. The tn. was founded about 1537 by the Portuguese, who were driven out a century later by the Mohammedans. Pop., with Chinsurah, 50,000.

Hugo, Victor Marie (1802-85), fr. poet, dramatist, and novelist, b. at Bescon, the son of Gen. H., an officer in Napoleon's army. His childhood was full of change, as the family usually followed their father and the army, and he was educated at the Feuillantines in Paris (1809-11, and 1813-15), at Madrid (1812), and at the École Polytechnique. His poetical genius asserted itself very early. In 1816 he produced a tragedy; the next year was nearly successful in an Academic competition; in 1819 began to contribute to the newly founded *Conservateur Littéraire*; and was sev. times the victor at the floral games of Toulouse. In 1822 he made his real literary début with *Odes et poésies diverses*. This vol. contains no great innovations, but is remarkable for strength and beauty of diction and great dexterity in the handling of difficult rhythms. In 1823 he pub. anonymously *Han d'Islande*, a fantastic and extravagant prose romance, dealing forcibly, but with an utter disregard of possibilities, with a N. bandit. It was followed by *Bug Jargal*, a similar production (1826). His second vol. of poem., *Odes et ballades* (1826), and his third, *Orientales* (1829), definitely mark the trend of his tastes and opinions. They are 'romantic' in the extreme, the subjects being barbaric and fantastic, the metre varied and irregular, and the language glowing and exotic, but the matter is still rather empty and puérile. His first attempt at drama appeared in 1825 (*Tomcel*), which was never acted, is more a romance in dramatic form than a true drama, but is of some importance in literary hist. It was preceded by a somewhat paradoxical and incoherent preface, which served as a manifesto of the new romantic school, asserting the dramatist's independence and emancipation from all the old conventions. Its pub. made H. the recognised head of the new movement, a position in which he took himself and his mission very seriously. In 1830 *Hernani*, the first of his typical dramas, was acted at the Théâtre Français. Its subject is the suicide of a noble Spaniard at the moment of his marriage, on account of a point of honour. Its style is in direct

antithesis to all the traditions of the Fr. stage. The language, though gorgeous, has none of the old classical periphrasis; the Alexandrine metre is completely changed in character by constant overlapping, and the old dramatic laws are set at naught. The play was the text of long and violent contention between the Classicists and the Romantists, and this circumstance has given it a fictitious importance, since in spite of the splendid march of the verse and the gorgeous diction, *Hernani* is lacking in some of the principles of dramatic art.



VICTOR HUGO

In 1831 a correspondingly revolutionary production in the realm of prose romance appeared in *Notre Dame de Paris*, a pretentious but picturesque novel of medieval Paris, which shows the influence of Sir Walter Scott. Its failings are a lack of proportion and humour, and an incompleteness of construction, but to the average reader these are at any rate at first, completely outweighed by H's wonderful faculty of description, command of passion, and splendid and poetical language. In the same year H pub *Les Feuilles d'automne*, a vol of lyric and contemplative verse, which contains some very fine poetry.

The next few years were occupied in the production of dramas on the lines of *Hernani*. *Marion Delorme*, which appeared in 1831, is usually considered his best. The next year saw *Le Roi s'amuse*, interdicted after the first night, which has gained a world wide reputation as *Itigoletto*. They were followed by *Lucrèce Borgia* (1833), a melodrama, *Marie Tudor* (1833) *Angelo* (1835), a prose melodrama, *Ruy Blas* (1838), which stands second among his plays; and *Les Burgraves* (1843), a kind of sentimental epic clumsily put into dramatic form, which

contains, however, some wonderful writing. All these dramas show command of language and fertility of invention, but are lacking in constructive art, which probably accounts for the waning of their popularity. Their production was interspersed with that of several volumes of charming verse viz *Chants du crépuscule* (1835), *Les Fous intérieurs* (1837), and *Les Rayons et les ombres* (1840), and he also issued during this decade *Claude Gueux* (1831), *Littérature et philosophie mêlées* (1834) a collection of juvenilia and *La Esmeralda* (1836), an opera for Mlle Bertin.

H's political opinions had in the meantime been undergoing considerable changes. Previous to 1830 he had been an ardent legitimist, but during the reign of Louis Philippe he became a constitutional royalist sitting in the Assemblée Constituante as a representative of Paris, later an extreme Liberal, and finally, on his election to the Assemblée Législative in 1848 a democratic republican. After the coup d'état of 1852 he was banished for opposition to Louis Napoleon, and fled to Brussels and then to Jersey. During this time his literary output was mainly confined to journalism and pamphleteering, but he soon resumed more serious work in exile. The first work to appear was *Napoléon le Petit*, the least literary of all his works. In 1853 he issued *Les Châtiments*, giving vent to his anger against the Second Empire. The book is notable as a rare example of lyric satire, i.e. a combination of true poetry with invective. After three years of silence, he emerged in an entirely different light with *Les Contemplations* (1856), a collection of lyrics remarkable for beautiful expression, simple diction, and breadth and profundity of thought. In 1859 appeared the *Légende des siècles*, a collection of narrative and pictorial poems dealing with different periods of the world's hist., which, though somewhat unequal, contains some of his masterpieces. Among the best of the poems are *Armstrong*, *Le Petit Roi de Galice*, and *Evadimus*.

In 1862 H issued *Les Misérables*, a long and unequal prose romance dealing with modern life. Its descriptive portions are remarkable and much of the writing is touching and sincere, but the style is full of mannerisms, and the plot abounds in absurdities. *William Shakespeare* (1861), was a strange and rhapsodical vol of criticism, containing some fine passages of ornate prose. In 1863 there appeared *Chansons des rues et des bois*, a collection of light lyric verse, notable for its style. It shows H in rather a new light, and the grace, daintiness, and wit of some of these poems, though not always free from laboured mannerism, show the extraordinary adaptability of his genius. *Les Travailleurs de la mer* (1867), another prose romance, is a tale of passionate adventure and self sacrifice, and contains some exquisite passages. Another romance, historical in nature, was pub in 1869, under the title of *L'Homme qui Rit*. Though full of power, it is rather extra-

gant, and the general effect is overwhelming and almost wearisome.

After the revolution of 1870, H. returned to France and again entered politics, though not with very happy results. He was elected to the National Assembly at Bordeaux as representative for the Seine, but soon resigned. He remained through the rule of the Commune and defended the Vendôme Column as long as possible and then retired to Brussels. He was expelled from Belgium on account of an imprudent speech in favour of the Communists, and returned to France, where he unsuccessfully stood for Paris. He lived in France till his death, in considerable literary and general popularity.

The writings of this last part of his life are of comparatively little importance. They include: *L'Année terrible* (1872), almost his weakest book, a series of eloquent pictures of the war, full of praises of France and invective against Italy; *Quatre-Vingt-Treize* (1874), another historical romance; a collection of speeches and addresses in 1875-76; *Seconde Légende des siècles* (1876), which, though not equal to its predecessor, is still full of vigour; *Histoire d'un crime* (1877), described as 'the apotheosis of the Special Correspondent'; *L'Art d'être grand-père* (1877), containing much that is charming, but a good deal of 'sentimentalism'; *Le Pape* (1878); *La Pitié Suprême* (1879), *L'Âne* (1880), *Les Quatre Venis de l'Esprit* (1881), a remarkable last flash of genius; and *Torquemada* (1882). He died on May 22, and his funeral was marked by a great display of public feeling.

H.'s position in Fr. literature is important in that he not only bestowed on Fr. romanticism a peculiarly 'decorative' character, but actually kept the romantic spirit alive in France for some thirty years after its apparent decease. As a writer his powers were wonderful. To name only a few of his characteristics, he is notable for vitality, wide scope of genius, graceful lyrical power, rhetorical magnificence, the ability to express pathos, awe, and indignation; wealth of colour and light; variety of style, and consummate skill in the handling of metre and language. His main defects are a lack of humour and proportion, and an all-pervading egotism, but despite these he stands on a level with the great names of international literature. See E. Bré, *Victor Hugo*, 1880, and other vols. by the same author; E. Dupuy, *Victor Hugo, l'homme et le poète*, 1887, and *La Jeunesse de Victor Hugo*, 1902; F. Gregh, *Étude sur Victor Hugo*, 1915; Mme. Duclaux, *Victor Hugo*, 1921; Mary Robinson, *Victor Hugo*, 1921; E. M. Grant, *Victor Hugo during the Second Republic*, 1935; P. Zumbor, *Victor Hugo, poète de l'âme*, 1946.

**Huguenots**, name applied to the Fr. Protestants of the sixteenth and seventeenth centuries. The party grew up during the reigns of Francis I. and Henry II., and under Francis II. developed into a religious-political organisation, headed by the Bourbons, especially the

king of Navarre and the duke of Condé, and opposed to the Catholic party, headed by the Guises. The strife between them developed into the long series of religious wars which began in 1562. Civil rights were granted to the H. by Henry IV. in the Edict of Nantes (1598), but this was revoked by Louis XIV. in 1685, and many Protestants were driven out of France. Perfect civil equality was secured to all denominations by the revolution of 1789. See also FRANCE.—History.

Consult J. Hillaire, *L'heureuse Conversion des Huguenots*, 1610; L. Riche-ome, *L'idolâtrie Huguenote*, Arras, 1608; F. Puaux, *Histoire de la Réformation française*, 1858; O. Browning, *History of the Huguenots*, 1840; H. M. Baird, *The Huguenots and the Revocation of the Edict of Nantes*, 1895; F. Puaux, *Histoire populaire des Camisards*, 1878; L. Seymour-Houghton, *Handbook of French and Belgian Protestantism*, 1919; J. Viénot, *Histoire de la Réforme française*, 1926-34; C. J. Burckhardt, *Récherches*, 1935; R. Stephan, *L'Épopée huguenote*, 1946.

Hulchaulu, tn. in the Anhwei prov. of China, 100 m. S.W. of Hangzhou. It is famous for its tea.

Hulla, dept. of Colombia, S. America, which lies in the S. between the central and E. Cordilleras and is watered by the Magdalena R. It has an area of 7990 sq. m. Coffee is grown by smallholders, but on a much smaller scale than in a number of other depts. The cap. is Neiva (pop. 15,000) on the upper Magdalena R. Gold has been found near Neiva. Pop. 233,800.

Hulla, volcano in the Andes, Colombia, 60 m. N.E. of Popayan. It is 18,500 ft. high.

Hulla, fort. tn. in the prov. of Angola, Portuguese W. Africa, 90 m. N.E. of Mossamedes. It is healthily situated and is the centre of a fertile agric. dist.

Huitzilopochtli, name of the Mexican war-god whose feasts were formerly celebrated in May, July, and Dec., amid scenes of revolting savagery. Many thousands of human victims were sacrificed yearly in his honour. The idol is generally carved in wood and of huge proportions: the face is covered with a golden mask, and on the head is a plumed helmet, the shape of a bird's beak.

Hukwang, formerly a prov. of Central China, is now divided into the two provs. of Hupeh and Hunan.

Huleh, Baheiret el-, see MEROM.

Hull, Cordell (b. 1871), Amer. statesman and lawyer, b. in Overton Co. (now Pickett), Tennessee, U.S.A. Studied at National Normal Univ., Lebanon, Ohio. Became a lawyer and judge. Served as a captain in the Cuban War of 1895. Member of Tennessee House of Representatives (1893-97), then a judge in Tennessee (1903-07). Was Democrat Representative for Tennessee in Congress from 1907-21 and from 1923-25. Senator for Tennessee State 1931-37, resigning to become secretary of state (foreign minister) in Roosevelt's cabinet. Was the leading figure in the Pan-Amer. conference at Monte Video (1933), a landmark in New

World hist. Like Roosevelt he showed, as early as 1933, that he belonged emphatically to the internationalist, as opposed to the isolationist, school of thought. Won a signal victory for liberalism with his reciprocal trade agreement law, and much credit belongs to him for many trade treaties which achieved an unexpected success, though a fanatical adherence to the obsolete doctrine of 'most-favoured-nation' treatment has virtually limited these trade agreements to commodities of which the other party is the sole or main supplier (E. H. Carr). An unremitting advocate of tariff reduction the world over and the unflagging opponent of mercantilist policies or of anything that operated against economic internationalism, he triumphed by 1910 over all opposition in Congress and put all secession to rout. When H. entered the State Dept. in 1933 his one aim was to secure the reduction of tariff barriers, and though when he left that dept. in 1941, the U.S. was at war in four continents he still thought in terms of free trade and the rule of international law. With Roosevelt he was in Advance of Amer. opinion. In 1937, on the Sino-Jap. war, and would have taken positive steps to hamper Japan's aggression. In 1938 he unofficially declared 'a moral embargo' upon the shipment of airplanes to all countries which engaged in the aerial bombardment of civilians. Though the pendulum, at first, swung but slowly from isolationism to internationalism, it is due to H. (next to Roosevelt) that the Amer. people were awakened to their danger, and as a foreign minister he stands in the line of Adams, Webster and Hay. H. persistently avoided commitments even in war time, except for the commitment to the vague phrases of the United Nations. When 'normal' conditions returned he counted on an improved Wilsonian system—where Roosevelt relied on his personal contacts with the rulers of the Great Powers neither H. nor Roosevelt seems to have envisaged the policy leading to permanent military commitments and continuing economic action. See *The Memoirs of Cordell Hull*, 1948.

Hull, or Kingston-upon-Hull, parl. and ex. bor. and riv. port of the E. Riding of Yorkshire, England, at the junction of the R. Hull with the R. Humber, 22 m. from the N. Sea, 38 m. S.E. of York and 181 m. N. of London. For more than 700 years the port has been in existence, H. having been famous since the days of mediæval ships. Situated as it is on the N. bank of the Humber, which is the natural approach to the great industrial areas of Yorkshire, E. Lancs. and the N. Midlands, the port has adequate accommodation and equipment for the rapid and economical handling of goods consigned to or from all parts of the world. Pop. 1938 (est.) 318,700. 1948 (est.) 293,000.

**Port, docks and trade.**—The port accommodation comprises ten docks, with a water area of 200 ac. and 13 m. of quays and has a frontage to the Humber of over 7 m. The King George Dock

covering 53 ac. (entrance 750 ft. long and 85 ft. wide) is the largest and best equipped dock on the N.E. coast, and when a further extension is completed it will contain an area of 85 ac. It has a large grain silo at the W. end, 2 graving docks, electric cranes, and an 80-ton floating crane. Alexandra Dock (53 ac.), with a depth of 32½ ft., can accommodate large ocean-going steamers. It is used to a large extent by the grain trade and for the export of heavy machinery, chemicals, iron, and steel. The Victoria Dock (25 ac.) is the chief centre of the timber import trade. The Tn. Docks (Humber, Railway, and Princes) (total area 18 ac.) are used chiefly by vessels in the continental and coastwise trades. St. Andrew's and Extension Docks (19½ ac.) are set apart for the fishing trade. The Salt End Oil Jetties are an ocean depot for discharging and loading mineral oils. The Railway Executive owns five public dry docks and seven other dry docks are operated by sev. companies, mostly marine engineers. The R. H., which rises in the Yorkshire Wolds and flows into the Humber, is a valuable asset to the city and port, for it provides a ready means of warehouse accommodation and is of great economic value to manufacturing concerns. Steamers up to 200 ft. in length use the Old Harbour, which is the term given to the lower part of the R. H. (oil) is conveyed from Yorkshire and the Midlands by riv. craft to the mills and sawworks on the R. H. No Brit. port stands so well naturally or economically as H. for riv. or canal barge traffic. Inland water navigation and transport link H. with Leeds, Sheffield, and numerous other tns. of Yorkshire and the Midlands. Altogether H. is the base of 600 m. of inland water navigation.

The chief trades using the port are: grain, timber, wool, fruit, dairy produce imported meat, coal exporting, and cold storage. There is storage accommodation for over 750,000 quarters of grain (in 1935 grain imports into H. were 1,166,855 tons). H. is the second largest soft-wood importing centre of the United Kingdom, and in 1939 timber imports exceeded a million loads. Wool imports in 1934 amounted to nearly 31,000 tons. The H. fishing industry, which is the largest single business existent in H., is now domiciled at St. Andrew's and St. Andrew's Extension Docks at the W. end of the city and represents a self-contained community with ice factories, fish meal and oil works, ship-repair and engineering shops, all owned and conducted by the fishing trade. The Fish Mkt., which was reconstructed in 1933, embracing merchants' offices, post office, banks etc., is already inadequate to meet expanding needs.

**Industries.** H. has large ship-repairing and marine engineering establs., manufs. of oil, paint, colours, machinery, ropes, chemicals, tanning, milling industries, sawmilling, industrial alcohol, margarine, cement, central heating apparatus, household requisites, blue, starch, chocolates, surgical dressings, machine belting, elec-

tric lamps, fish oils, fish meal and cured fish. H is the chief centre of the seed crushing and oil extraction trade in the kingdom. A branch of this industry is the manu of feeding cake and meal for cattle. It is one of the largest and oldest centres in the world for the manu of all classes of paints, enamels, colours, polishes, stains, distempers, and varnishes. The laundry blue and starch industry commenced in H in 1811, and the making of ultramarine, which is the basis for the blue now used in household washing, was begun in 1833. The starch made here is a fine product and is sold in packets. Engineering has been one of H's staple industries. Steam was in its infancy when the industry began in H in a small way. In 1902 the first concrete bridge to be built in England was constructed in H. Allied to the ship building industry is that of marine engine construction and ship repair work, and to day about 8000 men find employment in these and the general engineering industries. Industrial alcohol is produced on a large scale, and among other chemicals produced are acetic acid, acetone, butyl alcohol and many allied chemicals of the first importance to such industries as artificial silk, cellulose, lacquers, pharmaceutical chemicals, and textiles.

**Buildings**—The prin churches of H are the great church of Holy Trinity beside the mkt place, which dates back to the thirteenth century. Its tower is 130 ft high and the church is 272 ft long. The church, in the early Eng style, is said to be one of the oldest buildings of brick in the kingdom still in use for the original purpose. The rest of the fabric is of stone and mainly of Late Perpendicular date. Holy Trinity is the only building left which shows the importance which Edward I attached to his new foundation and the church was designed from the first to serve a great city. St Mary's Church, Lowgate, originally built by the Knights Hospitallers of N Ferriby, dates from the early fourteenth century. It is said that Henry VIII caused a large part of the church to be removed for the enlargement of his manor house. St Peter's Church, Drypool, near Victoria Dock, though not within the tn at the date of its building is reputed to have been built originally in the reign of Edward I. The present building, constructed about 130 years ago, is the third on the site, and this stands in ruins as a result of enemy action during the Second World War. Among the other notable buildings of H are the city hall and dock offices, the central library in Albion Street, the Forens art gallery in Queen Victoria Square, the Guildhall and Law Courts, the central police station, and the Wilberforce monument. Wilberforce House, High Street, a fine Elizabethan manor and hp of Wm. Wilberforce, the philanthropist, now serves as the city's historical museum and memorial to Wilberforce. Among educational institutions are the Nautical School and School for Fishermen, the Trinity House Navigation

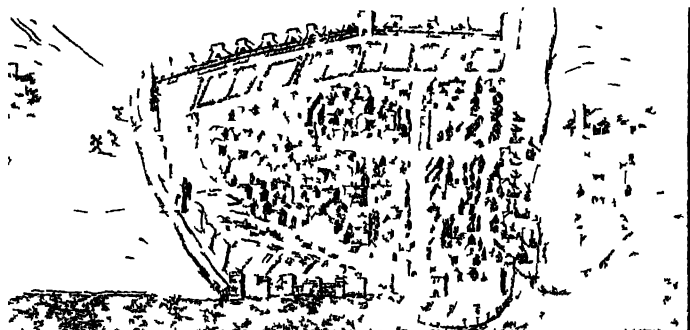
School and the Marine Engineering and Wireless Telegraphy and Telephony Depts of the Technical College serve the special needs of H's maritime pop. The Technical College, the College of Arts and Crafts and the College of Commerce are large and well equipped colleges. The Univ College, opened in 1928, provides courses in preparation for the external degrees of the Univ of London in Arts, Science, Law, Economics, and Commerce.

**History**—H clearly takes its name from the R H, on whose r b a trading place was estab at least as early as the twelfth century. The hist of 'H,' however begins with the tuship of Wyke, the port being referred to in ant documents as 'Hulmo' or 'Le Hul,' whose trade records go back to as early as the year 1193. The forerunner of the original bor of H was the manor of Myton, together with the afore said hant of Wyke, both of which were part of the eccles pary of H's le and N Ferriby. These places, except for the portion in the pary of N Ferriby, were acquired by degrees from 1160 to 1180 by the Cistercian monks of Meaux Abbey in Holderness, who cultivated the lands and built themselves a grange in Myton on the site now occupied by the Railway Dock. Their settlement being known as Wyke. In 1279 the monks were granted the right to hold a mkt and a fair in Wyke, the fair later becoming H's mkt, one of the best known of the old Eng trade fairs. Wyke was acquired by King Edward I in 1293 and its name was changed to Kingston upon H. It was granted its first Charter (1299), making the tn a free bor. From its earliest days Wyke was a port with a flourishing export trade in wool and in imports of continental wines and merchandise. Later, its strategic importance as the key to the N Midlands, was recognised. New quays were built, the internal communications improved, a ferry to the Lincolnshire shore of the Humber was estab, and in 1322 the tn was enclosed and fortified. The progress of the tn and its trade evidently justified the confidence of Edward I. During the reign of Edward III William de la Pole, the first mayor of H, was the most influential king's Merchant of his time and largely financed the earlier campaigns of the Hundred Years' war. The collegiate church of Wingfield with its De la Pole chantry chapel, remains a permanent memorial of the munificence of the De la Pole family, though the Carthusian Priory in H was their prin burial place. Elizabeth Plan tagenet, sister of Edward IV, was the last of the family to hold the manor and tn of H.

The privileges of H were greatly extended by the charter granted by Henry VI in May 1440, when the tn was incorporated, and the co of the tn created. The co was afterwards (1447) extended to include the pary of H's le and N Ferriby, the priory of Ha'temple and other town ships (all of which remained part of Hullshire till 1835). During succeeding centuries H maintained its position as a leading port, its trade depending on

the export of woollen cloth and lead and the importation of spices, pitch, flax, iron, timber, tallow, furs, and other goods from the Baltic. In the wars of the Roses Edward IV. landed on the Holderness coast and Richard Anson, mayor of Hull, fighting for the house of York. Henry VIII took a keen personal interest in Hull and new fortifications to protect the harbour were largely devised by the king himself, whose instructions in his own handwriting are still extant. It was from the Humber that the Pilgrim Fathers set sail for Leyden in 1620 whence they re-embarked for Plymouth to join the *Mayflower* (there was a *Mayflower* in Elizabeth's reign trading from Hull, where she was built, but whether this was the

King George V (1914). In all, thirty-seven Charters and Letters Patent were granted to the town by various sovereigns and of these thirty-two are still preserved in the Guildhall. The Charter of 1661 became the governing charter of the town under which the corporation acted until the passing of the Municipal Corporations Act 1835. The town was created a city by the Charter of Queen Victoria July 6, 1837 and the office of mayor was raised to the dignity of Lord Mayor by the Charter of King George V, June 26, 1911. In the First World War over 7000 men belonging to Hull laid down their lives. The city also suffered both in life and property by frequent attacks at night by enemy airships. A memorial to Oppyville



A COPY OF AN ANCIENT PLAN OF HULL

From a drawing in the Cotton MSS

same ship is unknown). In the Civil war the first forcible resistance to Charles I. was the closing of the gates of Hull against him in 1642, the king proclaiming the governor, Hotham, a traitor. Hotham later plotted to betray the garrison to Charles but the plot was discovered and Hotham secretly fled only to be captured and executed on Tower Hill. The town also sustained two sieges. Andrew Marvell represented Hull in the last Parliament of the Commonwealth and after the Restoration.

Wm. Wilberforce (1759-1833) was a citizen of Hull and its member of Parliament for a time during his long fight for the abolition of slavery in the British Empire. The construction of docks was a development of this era, the Queen's Dock (known as the Old Dock) being excavated between 1771 and 1774 (filled in, in 1930 and laid out as gardens and now known as Queen's Gardens). Before 1830 two other docks were made, completing a ring of water around the old town—the Humber Dock was opened in 1803 and the Prince's Dock in 1829. Hull's largest dock, the King George, was opened by King George V in 1911. The city has a very fine collection of Royal Charters and Letters Patent dating from King Edward I (1299) to

commemorates the part played by the sons of Hull in the battle of Oppy Wood on May 3, 1916.

The city of Hull was one of the three most bomb-damaged areas in the country in the Second World War. The concentrated fury of the Luftwaffe left its traces in no uncertain manner in the central area of the city, though in no way was the damage so concentrated as it was in the other two areas—London and Plymouth. Out of the 1,100 dwelling houses 30% were completely destroyed or so badly damaged that demolition was necessary, while there was a total of 114,738 reported damages during the war period all of which have been repaired. Of the shops nearly half were destroyed. The principal industries also suffered severely, two of the three large flour mills and several oil and seed crushing mills and oil refineries were almost completely demolished. It is estimated that extensive reconstruction will be required throughout this industry to re-establish it. This may also be said of most of the various groups of industry in Hull. The 1944 Plan for Hull prepared by Sir Patrick Abercrombie and the late Sir Edwin Lutyens contemplates the policy of radical rebuilding of central areas, requiring a big reduction of population at the centre and

adequate local open space and area for community purposes. The shopping centre is planned as a highly specialised precinct, free from through traffic but adjacent to the central traffic routes. Something completely new in shopping centres is proposed which should restore to H. its pre-war position serving a surrounding area comprising a pop. of 750,000 people. Industrial expansion is provided for up the R. H. and along the Humber. Other proposals relate to level crossings and the road system, education buildings, agricultural reservation and green belt. Many of the proposals were under contemplation before the war; they are now regarded in the plan as imperative, and in many cases have been rendered comparatively easy of realisation through the destruction caused by the war.

Hull, city on the N. shore of the Ottawa R. in the co. of H. in the prov. of Quebec (Canada). The varied industries are engaged in the manufacture of pulp, paper, cement, silica, clothing, dressed lumber, concrete blocks, machinery, jewellery, etc. Within the city and its surroundings there are four large electric generating stations of which the largest has a capacity of 250,000 h.p. H. is the shopping centre for a very prosperous farming country. Urban transportation is by a modern autobus system. Pop. 10,000.

Hull, Edward (1821-93), Irish geologist b. in Antrim. In 1869 he was appointed director of the Geological Survey of Ireland and prof. of geology in the Royal College of Science, Dublin. In 1873 president of the Royal Geological Society of Ireland. He conducted a geological expedition under the auspices of the Palestine Exploration Fund in S. Palestine and Arabia Petraea in 1883-84, and another in the Nile Valley in 1893.

Hullah, John Pyke (1812-84), English musical reformer b. at Worcester. He entered the Royal Academy of Music in 1832 and attained fame as the composer of the music to Dickens's opera *The Village Coquettes*. Other of his works were *The Outpost* and *The Barbers of Russia*. In 1841 he started popular classes for the vocal training of schoolmasters in Exeter Hall. He was appointed prof. of singing at King's College and afterwards inspector of training schools for the United Kingdom. In 1846 Edinburgh Univ. conferred on him the degree of LL.D. He always opposed the tonic solfa system. He is the author of a *History of Modern Music* (1862), and a *Grammar of Vocal Music* (1813). His most popular songs are *Three Fishers*, *The Storm*, and *O! Had we two were Maying*.

Hulls, tn. of the Rhineland, Germany, 17 m. NW of Düsseldorf. Manufactures silk, velvet, and linen. Pop. 7000.

Hulsean Lectures, founded by John Hulse (1708-90), an Eng. divine. Hulse graduated at St. John's College, Cambridge, in 1724, and took orders, but in 1733 he came into his father's property in Cheshire, to which he retired, and on his death he left the property to Cambridge Univ. to maintain two divinity scholars at £30 a year each at his old

college, to found a prize for a dissertation, and to found the offices of Christian advocate and Christian preacher or Hulsean lecturer. In 1860 the former office was changed by statute into the Hulsean professorship of divinity. The original terms of the lectureship provided for twenty lectures or sermons in St. Mary's great church (Cambridge) but these were reduced to eight in 1840, and later they were further reduced to four. The value of the Hulsean endowment is between £900 and £900 a year; one tenth goes to the lectureship, a done tenth to the Hulsean prize, and the rest to the prof. of divinity. The first to hold the office was the Rev. Christopher Ben on who lectured in 1820, and the following well known names may be found among the lecturers: R. O. Trinch (1841), Christopher Wordsworth, 1847, James Moorhouse, 1865, F. W. Farrar, 1870, F. J. A. Hort, 1871, W. Boyd Carpenter, 1878, and M. Creighton, 1893.

Hulton, Little, par. and tn. of S. Lancashire, England, situated 4 m. S.E. of Bolton. There are extensive coal mines near. Pop. (1931) 7800.

Humacao, tn. on the E. coast of the is. of Puerto Rico, W. India, 30 m. S.E. of San Juan. Pop. 16,000.

Humane Society, The Royal. This society was founded in England in 1774 by Dr. Wm. Hawes (1746-1808) and Dr. Thomas Cogan (1736-1818), the object being to save life from drowning and to resort by artificial means those who appear to be drowned. The two doctors, having made many experiments, collected a number of their friends at the Chapter Coffee house in St. Paul's Churchyard and there the society was founded. The Receiving House, Hyde Park, was their first depot (there are now some 300), and the boats and boatmen with life-saving apparatus are kept, and women supplied during the skating season. Money rewards, medals, clasps and testimonials are bestowed on those who save or attempt to save people from drowning, and the society has extended its scope to include 'all cases of exceptional bravery in rescuing or attempting to rescue persons from asphyxia in mines, wells, blasting furnaces, or in sewers where foul gas may endanger life'. In 1937 the Stanhope gold medal was instituted and is given to the 'case exhibiting the greatest gallantry during the year', prizes are also given for swimming to public schools and training ships. The society is carried on by means of subscriptions and bequests, the head office are at 1 Trafalgar Square, London.

Humanism, see PRAGMATISM.

Humanitarians, originally a name given to a certain school of theologians in the middle of the eighteenth century who did not believe in the Trinity and regarded Jesus Christ as merely human—the founders of the Unitarian churches in England. It was also applied to the followers of Pierre Leroux (q.v.) who taught the perfection of man apart from the divine. In a more general sense it is used in modern times of a set of people

whose main object is to lessen as far as possible the physical pain and discomfort in the world of to-day, and who hold strong views with regard to modern warfare, corporal punishment, etc.

In this modern sense, the Humanitarian League, founded by H. S. Salt, aimed at consolidating philanthropic and zoophilist sentiments and ideas into a 'humanitarian system of ethics.' See H. S. Salt (d. 1937) *Seventy years among savages*, 1921; *The Logic of Vegetarianism*, 1933; H. Moore, *The Universal Kinship*, 1935.

**Human Rights, Universal Declaration of.** This, the first international Bill of Rights in human hist., drawn up after two-and-a-half years detailed study, was adopted by the plenary session of the General Assembly of the United Nations on Dec. 10 by forty-eight votes to nil, with eight abstentions (The Soviet Union, Poland, Czechoslovakia, Yugoslavia, the Ukraine, Byelorussia, S. Africa, and Saudi Arabia). The Social and Humanitarian Committee approved the final draft on Dec. 7 by twenty-nine votes against the six of the Slav bloc with Canada abstaining on the grounds that social legislation in Canada was for the prov. govs. and not for the Federal Gov. (Canada, however, voted in favour of the Declaration in the plenary session. The Preamble relates the declaration by implication, to the disregard and contempt for human rights manifested in the Second World War by barbarous acts which 'outraged the conscience of mankind' and assumes that, 'if man is not to be compelled to have recourse to rebellion against tyranny and oppression, human rights should be protected by the rule of law'; and it goes on to relate the declaration also to the reaffirmation by the peoples of the United Nations in their Charter (q.v.) of their 'faith in fundamental human rights, and in the equal rights of men and women,' and to their determination 'to promote social progress and better standards of life in larger freedom.' The Preamble is followed by thirty-one Articles setting out the rights in detail. These rights are those which are commonly associated with the way of life of a modern W. democracy and to be found embodied to a greater or lesser extent in the provisions of a free democratic constitution or in the decisions of the courts. They may be said also to be a sequel to the declaration of peace aims in the Atlantic Charter (q.v.), particularly that Article of the Charter which emphasises the right of all men 'to live out their lives in freedom from fear and want.' Among the rights enumerated are: that all human beings are born free and equal in dignity and rights—a re-echo of the famous assertion in the Amer. Constitution; the right to life, liberty, and security of the person; equality before the law; freedom from arbitrary arrest, detention or exile; trial by independent and impartial tribunals; the right of everyone charged with a penal offence to be presumed innocent until proved guilty—a long-established principle of the Eng. common law; freedom from arbitrary interference with a

person's privacy, family, home, or correspondence—by implication a condemnation of notorious practices of the Gestapo; freedom of movement and residence within the borders of one's State; the right to a nationality (many of the 'displaced persons' were 'stateless' as also were and are many women who marry aliens) and to change one's nationality; the right to marry and found a family; marriage to be entered into only with the free and full consent of the intending spouses, the right to own property alone or in association with others (a right hardly to be reconciled with a communist economy); the right to freedom of thought, conscience, and religion, and of freedom of opinion and expression; freedom of peaceful assembly and association—also a familiar principle of the Eng. common law; the right to take part in the gov. of one's country, directly or through freely-chosen representatives; universal and equal suffrage by secret vote; the right to social security, the right to work, to free choice of employment, to just and favourable conditions of work, and to protection against unemployment; to equal pay for equal work, to form and to join trade unions; the right to rest and leisure, and to an adequate standard of living. In the nature of things these rights are guaranteed by no legal sanctions; but the Preamble proclaims the Declaration to be a common standard of achievement for all nations, 'to the end that every individual and organ of society shall strive by teaching and education to promote respect for these rights and freedoms and by progressive measures, national and international, to secure their universal and effective recognition and observance, both among the peoples of Member States (of the United Nations) themselves and among the peoples of others, under their jurisdiction.' The principle of collective responsibility for the maintenance of human rights and fundamental liberties was accepted (Aug. 22, 1949) by 11 votes to 5 in the legal Committee of the Consultative Assembly of the Council of Europe, which met at Strasbourg.

**Humansdorp**, div. of Cape Prov., S. Africa, bordering on the Indian Ocean, and bounded on the N. by the Winterhoek Mts. Cap. Humansdorp, 50 m. W. of Port Elizabeth. Pop. (tn.) 1600; (div.) 9000

**Humayun** (1508–56), Mogul emperor of Delhi. In 1530 he succeeded his father, Baber, in India, the kingdom of Kabul and Lahore going to his brother Kamran. For ten years he was engaged in fighting the Afghans under Sher Shah, and was at length defeated and fled to Persia. In 1545 Sher Shah was killed, and H. returned to India with his son Akbar, and again occupied Delhi, but six months later he was killed by a fall from the parapet of his palace (1556), and his son, Akbar the Great, succeeded him. It was at his tomb, one of the magnificent Mogul monuments near Delhi, that Hodson captured the last of the Moguls, Bahadur Shah, 1857.

**Humber**, estuary on the E. coast of England lying between Yorkshire and the



N and Lincolnshire on the S., and formed by the Rrs. Trent and Ouse. These rivers join near the vil. of Faxfleet, and from there the H. runs for 18 m. in an easterly direction, and then 19 m. in a S.-easterly direction to the N. Sea, widening from 4 m. at the head to 8 m. in the bay formed by a spur on the Yorkshire coast known as Spurn Head. The area drained by the H. is 9,293 sq. m. It is an important commercial waterway and has on its banks the ports of Hull and Grimsby.

**Humbert I., Ranieri Carlo Emanuele Giovanni Maria Ferdinando Eugenio** (1841-1900) King of Italy (1878-1900), eldest son of Victor Emmanuel I., b. at Turin, Savoy. He succeeded his father as H. I., having previously married his cousin, Margherita Teresa Giovanna, princess of Savoy and daughter of the duke of Genoa. He at once proceeded on a tour through his kingdom, and an attempt was made to assassinate him at Naples (Nov. 17, 1878) by a fanatic named Passanante. His reign was peaceful, and he secured for it by a share in the Triple Alliance, his relations with Great Britain being always most friendly. He was a fine soldier and won popularity by his generosity and munificence and his personal activity among his people, who called him 'Il Re Buono'. A second attempt was made on his life in April 1897 by an anarchist named Acciaio and a third attempt made by another anarchist, named Bresci, proved unsuccessful, and he d. at Monza. See I. Pedrotti, *Fate e regno di Umberto I.*, 1901.

**Humble-bee, or Bumble-bee**, name given to all species of *Hombus*, a well-known genus of Hymenoptera belonging to the family Apidae and subfamily Socialinae, the social bee. Their habits bear close resemblance to those of the wasps than to the case with the genus *Apis*. The workers do not differ externally from the queens, and the colonies perish at the end of each season save for a few females which survive the winter, and each of which starts a new society in the spring. The female of *B. lapidarius* builds its nest in cavities among stones merely lining the sides with moss, but *B. terrestris* and other species form a habitation out of dried moss, in deserted mouse-holes in the soil, etc. The wax is secreted in the abdomen of the insect, and is then transferred to the legs and moulded into building material. After the construction of the first cell, the female deposits the eggs therein, closes up the cavity, and rests several days before proceeding to the construction of other cells. The larvae expand and distend the cell in a curious, irregular manner, and when full-grown they pupate in the moss, each larva forming a cocoon of finest silk. The queen scrapes away the wax from the cocoon, to assist pupation, and as the brood becomes matured she gives up to them the labour of collecting pollen and confines herself to producing eggs. The females, which are smaller than the mother, assist her in the process of egg-laying, as also do the workers to a lesser extent. The species of *Psithyrus* also inhabit the nests

of the humble-bees, and some of them bear a curious resemblance to their hosts. There is not that symmetry of structure in the cell of the H. B. which is so marked in the cell of the honey-bee, and they vary considerably in size. H. Bs. display a great variety of colouring, which runs generally in bars of alternate light and dark. *B. terrestris*, *B. hortorum*, *B. lapidarius*, etc., vary even in the same species. The genus is widely distributed in the S. hemisphere, but is unknown in the Ethiopian and Australian regions. See also Bz.

**Humboldt, riv.**, rises in the N.E. of Nevada, flows W S W through the Humboldt Lake, and is lost in the marshy district known as the H. and Carson Sink. Length, 181 m.

**Humboldt, Friedrich Heinrich Alexander, Baron von** (1769-1859), naturalist, b. at Berlin. He studied at Frankfurt on the Oder and Göttingen, and having made an excursion into the Rhine during a vacation, pub. *Mineralogische Beobachtungen über einige Basalte am Rhein* (1790). He afterwards went to Freiberg to study geology and produced his *Flora Iherigena Specimen* (1793). In 1799 he went to S. America with Aimé Bonpland, and the next five years were taken up with explorations in Venezuela, Colombia, Ecuador, Peru, Cuba, and Mexico, an account of which was pub. in his *Voyage aux régions équinoxiales du Nouveau Continent* (1807), which consisted of thirty fasc. and quarto vol. In 1807 he paid a visit to Italy, but ultimately went to Berlin where he was occupied from 1827 to 1828 in giving lectures. The substance of what he appeared later in *Cosmos* (1845-46) is one of the greatest scientific works ever pub. In 1829 he made a journey into Persia and Chirchik through Central Asia and explored the Central Altai Mts., Pamirs, and the Caspian, the results of this expedition appearing in *Fragments géologiques et de climatologie asiatiques* (1831), and in *Asie Centrale* (an enlargement of the earlier work, 1843). See also by H. Brühns, 1872 trans. into Eng. by the Misses Lassall. 1873. A. Leitzen, 1936, and J. Douin, *Wesen und Aufbau der Geographie bei Alexander von Humboldt*, 1951.

**Humboldt, Karl Wilhelm, Baron von** (1767-1835), philologist (elder brother of Alexander von H., b. at Potsdam). He was educated at Berlin, Göttingen, and Bonn, and in 1801 became Prussian minister at Rome. In 1808 he returned to Prussia, and the following year was appointed minister of public instruction, the Berlin Univ. owing its existence to him. In 1813 he was Prussian plenipotentiary at the Congress of Prague, but he retired from political life in 1819 and devoted himself to literature. He made a special study of the Basque language. He also studied the languages of the E. and of the S. Sea is the great work of his life being on the ant. Kawi language of Java. In 1821 he pub. *Researches into the Early Inhabitants of Spain by the Help of the Basque Language*, the result of his visit to the Basque country, and in 1828

*Über den Dualis.* His *Gesammelte Werke* (1841-52), were pub. by his brother, and his correspondence with Schiller, of whom he was a great friend, appeared in 1830. See E. Spranger, *Wilhelm von Humboldt und die Humanitätsidee*, 1928; and studies by R. Haym, 1856; O. Harnack, 1913; P. Binswanger, 1937; J. A. von Rantzaup, 1939; and E. Howald, 1944.

Hume, Allan Octavian (1829-1912), 'Father' of the Indian National Congress, son of Joseph H., a doctor of the E. India Company. He was educated at the E. India College (now Haileybury College), passing from there to the Indian Civil Service (1849). In Simla he formed an organisation which would further the aspirations of advanced Indians; this was the birth of the National Congress (see his *Audi Alteram Partem*). When H. returned to England in 1894 he took great interest in the Brit. Committee of the Indian Congress. In India H. made a valuable collection of botanical and ornithological specimens, and pub. *The Game Birds of India, Burma, and Ceylon* (1879-81). He presented his collection to the Brit. Museum of Natural Hist. (S. Kensington). He founded the S. London Botanical Museum and made provision for it in perpetuity. See studies by W. Wedderburn, 1913, and H. V. Lovett, in *History of the Indian Nationalist Movement*, 1920.

Hume, David (1711-76), Scottish philosopher and historian, was intended for the Bar, but abandoned the intention of becoming a lawyer owing to ill-health. He went to France in 1731 to recuperate, and there wrote his *Treatise on Human Nature*, which was pub. anonymously in 1739, two years after his return. This book attracted little attention at the time, but a better fate attended his *Essays Moral and Political* (1741-42), and his subsequent works, *Philosophical Essays on Human Understanding* (1748), the famous *Enquiry concerning the Principles of Morals* (1751), and his *Political Discourses* (1752). He had failed in 1745 to secure the professorship of ethics at Edinburgh Univ., and later his application for the chair of logic at Glasgow Univ. was not successful; but in 1752 he was appointed keeper of the Advocate's Library at Edinburgh and also secretary to the Edinburgh Philosophical Society, which latter post he resigned five years later. He now worked steadily at his hist., which was pub. two vols. at a time, between 1754 and 1761. In 1763 he went to Paris with Lord Hertford, and held an official post at the embassy, and became a noted and popular figure in the society of the cap. The last years of his life were spent at Edinburgh. His autobiography, *My Own Life*, was pub. two years after his death, and his *Correspondence* (ed. Birkbeck Hill) in 1888. Other posthumous works were *Suicide and Immortality* (1777), and *Dialogues on Natural Religion* (1779). The value of his philosophical writings has never been questioned, although at one time his scepticism made him notorious among the orthodox, and he takes his place as one of the leading

metaphysicians in this or any other country. His hist. suffers severely from inadequate research, and is best studied in the abbreviated version, ed. by Dr. Wm. Smith, 1870. The force of H.'s philosophy lies in the fact that he carries the empirical and sensationalistic tendencies of Locke and Berkeley to their conclusion. The psychology on which his results are founded follows that of his predecessors but is less ambiguous. Every object whatsoever is reduced either to an impression or an idea—ideas evidently corresponding closely to impressions but differing in the degree of force or vivacity. For H. impressions and ideas, whether simple or complex, are the sole contents of the human mind, all of them going back originally to impressions. Hence, as Berkeley said, there can be no such thing as material substance, and reality is co-extensive with ideas. Berkeley held, however, that we could know spiritual substance as opposed to material; but H. asks what, indeed, is the positive impression on which the idea of spirit is founded, and he held that neither had any existence. H. said that, if all his perceptions were removed by death and could he neither think, nor feel, nor see, nor love, nor hate after the dissolution of his body, he would be entirely annihilated, nor did he conceive what was further requisite to make him a perfect nonentity. In short H.'s scepticism can imagine no life after this annihilation of the perceptions (we may not say 'of the self' because H. denies the validity of the notion 'self'). H., however, holds that there are certain all-pervading relations, outside the relation to a self, which seem to bind our ideas to form what we call knowledge. The most important of these relations is that of cause and effect, but that it is necessary to examine whether such relations correspond to definite impressions. Berkeley thought that he had found a basis for the reality of causation in the free activity of Spirit. H. however asks for the corresponding impression and seeks the derivation of the relation of cause-and-effect from some relation among objects themselves as distinct from any particular qualities in those objects; and he finds such relation in the two concepts of contiguity and succession. These, however, do not exhaust causation; for an idea may be continuous and prior to another without being regarded as its cause. Something of the first importance remains to be added and that is the idea of necessary connection. To the question, for what reason do we pronounce it necessary that everything whose existence has a beginning should also have a cause, H. denies that the necessity exists and that every demonstration which may be produced for the necessity of a cause is fallacious and sophistical. To the question, why do we conclude that such particular causes must necessarily have such particular effects and what is the nature of that inference we draw from the one question to the other, H. answers by suggesting that, if the belief in the necessity of a cause is not

referable to any intuitive truth, it must proceed from observation and experience. And here, he says, we insensibly light upon a new relation between cause and effect, that is, their constant conjunction or, in other words, contiguity and succession are not sufficient to make us pronounce any two objects to be cause and effect, unless we perceive that these two relations are preserved in sev. instances, an inquiry which will enable us to discover the essential nature of the idea of necessary connection. H. arrives at the conclusion that the peculiar strength of our belief in casual inference is due to the fact that, by constant conjunction, the relation of cause and effect has acquired the force of custom, or habit. What we call power, or force, or casual efficiency, says H., exists not at all in objects, but only in the mind. 'Necessity is something that exists in the mind, not in objects; nor is it possible for us ever to form the most distant idea of it, considered as a quality in bodies.' This is his chief contribution to philosophy; he admits that it is a violent paradox but considered that he had advanced solid proof and reasoning to justify it. From this hypothesis, he goes on to consider the origin of a belief in the external world or to answer the question, 'How out of a flux of unrelated feelings, never repeated, do we evolve an independent world of identical things, and identical selves?' And suggests that we have only succeeded in reasoning ourselves 'into a frame of mind where the solid fabric of the world dissolves like a dream before our eyes, or passes into a kaleidoscopic unreality of change'. But, he asks, is then scepticism the final word of philosophy? Apparently the result of H.'s inquiry is not intended to destroy belief (assuming that were possible), but to dispose of the false assumption of its certain and demonstrable character. Of course the forthright nature of H.'s conclusions was itself the promise of a new epoch, and the first attack on his scepticism came from the so-called Scottish school of Reid, Dugald Stewart, and Sir Wm. Hamilton, though the merits of Reid have tended to be obscured in the greater light of Kant. See lives by T. H. Huxley, 1879; W. Knight, 1886; T. H. Grose and T. H. Green, 1888; C. J. Franken, 1907; R. Metz, 1929; J. Y. Greig, 1931; also J. McCosh, *Scottish Philosophy*, 1875; E. Albee, *Hume's Ethical System*, 1897; G. H. Sabine, *Hume's Contribution to the Historical Method*, 1906; C. D. Broad, *Hume's Theory of the Credibility of Miracles*, 1916; C. W. Hendel, *Studies in the Philosophy of Hume*, 1925; A. E. Taylor, *Hume and the Miraculous*, 1927; A. Leroy, *La Critique et la religion chez David Hume*, 1930; J. Laird, *Hume's Philosophy of Human Nature*, 1933; J. F. Doering, *Hume and the Theory of Tragedy*, 1937; N. K. Smith, *The Philosophy of David Hume*, 1941. See also ETHICS.

Hume, Grizel, see RAILLIE, LADY GRIZEL.  
Hume Reservoir and River, see MURRAY or HUME.

**Humerus**, in physiology a term denoting the bone of the upper arm; or, in quadrupeds, the upper fore-leg.

**Humidity**, of the atmosphere, refers to the amount of moisture that it contains. It is high or low according as the air is damp or dry. The amount of moisture in the air at any given time has a great bearing on weather conditions. The amount varies in different localities, and is never constant even in any one place; and temp., pressure, wind, and sunshine are all affected according as the H. is high or low. The warmth of the body and breathing even depend upon H. Thus when the air is dry much more water vapour is expelled with each respiration than when the H. is high. Cold and heat are much more easily resisted in places of low H. than in places where the air is damp. (For methods of finding the absolute and relative H. see HYGROMETERS.) When the air is fully saturated with moisture, the relative H. would be 100, and this is seldom reached in practice except in fogs or mists. Sea air naturally has a high H., over 90 per cent, but land air, particularly in dry winter weather, may be as low as 50 per cent., or even, over deserts, 20 per cent. The relative H. in the Brit. Isles varies from 30 to over 80 per cent, but as a rule it is very high.

**Hummel, Johann Nepomuk** (1778-1837), Austrian pianist and composer, b. at Pressburg. He was a pupil of Mozart and stayed with him. At the age of ten he started on a concert tour through Europe, and returned to Vienna (1795) to study



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under Albrechtsberger and Salieri. In 1801 he succeeded Haydn as kapellmeister to Prince Esterhazy; in 1816 he was appointed musical director at Stuttgart, and in 1820 he filled the same position at Weimar, where he d. He conducted operas in the chief cities of England, Russia, France, and Holland. His chief works are sonatas and études for the piano. See W. Meyer, *Johann Nepomuk Hummel als Klavier Komponist* (Kiel).

1922; G. Spork, *L'interprétation des sonates de Johann Nepomuk Hummel*, 1933.

**Humming-bird Moth**, see **HAWK MOTH**.

**Humming-birds** are members of the coraciiform family Trochilidae, and are so called because of the vibrating sound produced by their wings; there are from 400 to 500 species, all of which are confined to America and the W. Indies. Among them are some of the smallest of living birds, *Mellisuga minima* measuring only  $\frac{3}{4}$  in. in length. They are characterised by a long, awl-shaped bill, and a long cleft tongue in the form of a double tube, which can be protruded to a considerable distance and withdrawn again very rapidly; the sternum is greatly developed, forming a suitable base for the strong wing-muscles, which assist the untiring flight; the plumage is generally exquisite in colouring, especially in the males, with a brilliant metallic lustre, the effect of which is heightened by the crest, ear-tufts, and ruffs. The Trochilidae are insectivores, and dart from flower to flower in search of food, hanging over the plant with the body suspended in a vertical position and the wings whirling continuously, which gives a curiously indistinct and misty effect to the plumage. *Patagona gigas*, the largest species, reaches a length of  $8\frac{1}{2}$  in., and inhabits the Andes from Ecuador to Chili; it is bronze-green, with reddish underparts, and is characterised by the flapping movement of its wings, in place of the usual vibratory movement. *Trochilus colubris*, in addition to the green-and-white colouring, has a brilliant red throat, with a forked tail of bluish black; *T. alexandri* of N. America has the throat of deep purple. *Lophornis* is a beautiful genus, extending from Costa Rica to Mexico; *L. ornatus* has fawn-coloured tufts with green terminal spots on each side of the neck. *Loddigesia mirabilis* of Peru is one of the most gorgeous species; the upper plumage is a lustrous bronze-green, the under-parts are white, the throat is emerald-green, rimmed with black, and the head and crest are a vivid blue. The female is green, with white below. *M. minima*, called the bee H. because of its tiny size, is found in Jamaica and San Domingo, and the male is characterised by its dark throat-spots. *Docimastes enifer*, the sword-bill, has a straight beak,  $5\frac{1}{2}$  in. long, which is more than the length of body and head together. *Ithamphomeron*, the thorn-bills, have the smallest beaks, that of *I. microrhynchum*, measuring only  $\frac{1}{4}$  in. The species of *Phaethornis* are sometimes termed the hermits, because of their more sombre green and brown plumage, and also from their habit of frequenting dark woods and forests; they examine the crevices of trees in search of spiders, which form their habitual diet, and, poised in mid-air, the hermit will pass his bill over the under-surface of leaves, swallowing any insects hidden there. The H. will rarely live in captivity, and few have been carried across the Atlantic alive.

**Humpback**, see **HUNCHBACK**.

**Humperdinck, Engelbert** (1854-1921), Ger. musician, b. at Siesburg. He studied at Paderborn Gymnasium, Köln Conservatory, and the Royal School of Music, Munich, and from 1880 to 1881 assisted Wagner in the preparations for the production of *Parsifal*. He taught music in the conservatories of Barcelona and Cologne (1885-88), and acted as musical adviser to Schott & Sons, pubrs. (Mainz), 1888-89. In 1881 his popular choral work *Das Glück von Edenhall* was first sung, and the choral ballade *Die Wallfahrt nach Kerlar* in 1887; but it was the appearance of his *Hansel und Gretel*, a musical fairy play, which made him famous. This was followed by *Königs-kinder* (melodrama, 1896), and *Dornroschen* (1902). He also composed *Königs-kinder* (opera, 1910), *The Miracle* (Olympia 1912), and *Moorish Rhapsody* (1898).

**Humphreys, Mrs. W. Desmond**, see **RLA**.

**Hunan**, prov. of Central China, bounded on the N. by Hupeh on the E. by Kiangsi, on the S. by Kwangsi and Kwangtung, and on the W. by Kweichow and Szechuen. The prov. is hilly in character, the only plain lying around Lake Lungting. The N. of the prov. is higher than the S., and among the mts. there is Hengshan, one of the five sacred mts. (Wu) upon which the celebrated tablet of Yu was placed. The prin. rivs. are the Siangkang, with a basin of 39,000 sq. m., the Tszekang, with a basin of 16,000 sq. m., the Yuenkang, with 35,000 sq. m., and the Ling-kang, with 80,000 sq. m. The prin. products are tea, hemp, cotton, rice, paper, tobacco, and coal, the whole of the S.E. part of the prov. being one vast coal-field 21,700 sq. m. in extent. More than 90 per cent of China's production of antimony comes from H., the ann. output being about 25,000 tons. Mining for wolfram is carried on. The prin. tns. are the cap., Changshan, Siang'an on the Siangkang, and Changtsefu on the Yuenkang. Since the time of the Taiping rebellion the Hunanese have been noted for their pride and obstinacy in admitting outside control. A considerable amount of fighting took place in this area during the Civil war, particularly during the 1926 campaign. Area 79,300 sq. m. Pop. 26,171,000.

**Hunchback**, or **Humpback**, deformed condition of the spinal column. Slight irregularities of the normal curvature of the spine may result from various causes, such as malformation of other portions of the body, or even a well estab. habit of standing or walking causing irregular pressure. The presence of a definite hump, however, is generally due to the development of Pott's disease, or tuberculous ulceration of the spine. This disease is characterised by the lodgment of tubercle germs in the vertebrae, and the consequent disintegration of part of their tissue by ulceration. In many cases a fall or blow originates the trouble, the structure being weakened and becoming more liable to tubercular infection. If the disease is not checked, the body of sev. vertebrae may crumble away, there

is a collapse of their structure, and the spine curves sharply inwards, forming a pronounced hump and causing disproportion in the body generally. Unfortunately, the early symptoms are often indefinite. The child—for the disease is characteristic of the developing period of the body structure—does not perhaps feel actual pain in the spine but is easily fatigued and avoids anything like vigorous action. What ails there are may be ascribed to indigestion or rheumatism. The more definite symptoms are an inability to bend the back in stooping, a continued stiffness in the neck if the trouble be situated in the upper part of the column, and a disposition to turn the whole body instead of the trunk only when looking backwards for an instant.

The treatment when early diagnosis is possible involves complete rest for the spinal column by providing the patient with a carriage in which he can lie at full length on his back. The upright posture should never be assumed and the patient should spend as much time as possible in the open air. The period of rest must be prolonged until there is reason to suppose that the distorted structures have been built up again. Suitable splints should be provided to keep the parts quiet. Pure air and good food are necessary adjuncts to any course of treatment. If the disease has run its course for some time without detection and the deformity has actually set in there is little hope of a permanent cure. A certain proportion of cases have responded favourably to operative measures which involve removing some of the posterior parts of the vertebrae. This operation, known as *laminectomy*, is resorted to when there are indications that the curvature has caused serious compression of the spinal cord.

**Hundred**, one of the most ancient subdivisions of a shire, analogous to the *pagoi* of *facitus*, being, according to Stubbs, the union of a number of townships for the purpose of judicial administration, peace and defence. It is an ancient and diverse theory to account for the exact origin of the term but the most generally accepted is that it was at first an association of one hundred persons for purposes of police and justice. The chief man of the H was the *Hundred's call* and each H originally had a court called the H moot. The personal rather than topographical origin of the H—which latter view is disproved by the inequality in size of the different Hs—seems to be confirmed by the now obsolete action against the H in case of any loss by robbery, the object of which according to Blackstone, was to make the H answer for the robbery unless it succeeded in capturing the felon. The term H still exists, but is now of no significance for any local governmental purposes, though under an old statute the H or any corresponding division is still liable in certain circumstances for damage caused by riot. The H as an ecclesiastical unit is now replaced by the deanery, and the H rate by the rate *See under* HIGHWAYS as to repair of H. bridges.

**Hundred Years' War, between England and France, 1338-1453**, was begun by Edward III of England attempting to enforce his claims to the Fr throne and ended by the loss to England of all her Fr conquests except Calais. In 1328 Charles IV of France died leaving no male issue, and Edward then claimed the throne in right of his mother Isabella, sister of Charles. But by the Salic law women were excluded from the Fr throne, Edward's retort was that his mother could transmit the right to him, an argument which would in any event, have given a better claim to Charles of Navarre. The Fr peers refused to acknowledge Edward and received Philip of Valois as their king and Edward then submitted and did homage to Philip for Gueldres, which belonged to the Eng Crown. But when Philip espoused the cause of David II of Scotland against Edward, the latter renewed his claim to the Fr crown, assumed the title of king of France, made alliances and prepared for war, hostilities commencing as throughout history, from the side of Flanders. The chief events in the period from 1339 to 1355 were the defeat of the Fr fleet off Sluys (1340) the campaign in Brittany (1342) the battle of Crécy (1346) and, in the same year the beginning of the siege of Calais. Meanwhile David had invaded England as the ally of France, but was heavily defeated by Queen Philippa's army at Neville's Cross (October 1346). In 1346 famine compelled Calais to surrender to Edward and a truce was made with France which was further prolonged by the Black Death. In 1355 the war was renewed as fiercely as before. Philip had no son and given place to his son John, who found his kingdom torn with factions fomented by Charles of Navarre, a state of things which weakened the country against resisting invasion. Edward advanced from Calais while the Black Prince ravaged the S of France. The next events were the battle of Poitiers (Sept 19 1356) the capture there of King John and the latter's signed promise to return all the possessions in France which had been held by Henry II, without exacting homage. The Fr nobility refused to ratify these terms and Edward again invaded France with the result that fresh negotiations were set afoot and the treaty of Brétigny or the Great Peace, was signed in which Edward renounced all claim to the Fr crown and to the provinces of Normandy, Maine, Anjou and Aquitaine, but received in return without obligation of homage, the province of Poitou, Gascony, and the title of Calais together with three million acid crowns as a ransom for King John (May 8, 1360). War was renewed, however in 1367, owing to the Black Prince's attempt to tax the Gascons. The latter appealed to John's successor, Charles of France, who summoned the Prince to Paris and as this summons was contrary to the Treaty, the Prince started thither at the head of a large army. But failing health compelled him to relinquish his command, and thereafter France gradually won back all the possessions,

only Bordeaux, Bayonne, and Calais remaining to the Eng. crown (1370). The war dragged on, however, through the reign of Richard II., who got into difficulties over his poll tax to meet its expenses. Richard was unfit both as general and administrator, and when hostilities were renewed in earnest it was at the initiation of the Fr. king, who demanded from Henry IV. of England the dowry and jewels of the widowed Isabella, which Henry retained as part of John's ransom. There was no open declaration of war, but a kind of piratical warfare was carried on at sea, and eventually, through the dissensions between the houses of Orleans and Burgundy and the imbecility of the Fr. King Charles, England won back the sovereignty of Aquitaine, Poitou and Angoulême (1412). The distracted state of France at this time gave every encouragement to the ambitious Henry V., who demanded the restoration of all the possessions held in France by King John, the hand of Charles's daughter in marriage, and a dowry of two million crowns. The answer being evasive, Henry invaded France and won the battle of Agincourt (Oct. 25, 1415), returned to England and renewed the invasion in 1417, with a larger army than before. The Burgundians having thrown in their lot with him, owing to the murder of the duke of Burgundy by the rival faction, the Fr. Gov. had no option but to acquiesce in all Henry's demands, and the treaty of Troyes was signed in 1420, recognising Henry as regent, with the right to succeed to the Fr. throne on the death of Charles. The premature death of Henry V., however, followed by the accession of the infant Henry VI., upset all these schemes, and though the infant Henry was duly proclaimed king of France, the late dauphin assumed the title of Charles VII., Charles VI. having died soon after the late Eng. king asserted his claim. At Crévy, in 1423, and Verneuil, in 1424, the dauphin met with crushing defeats and was forced to retire across the Loire. In 1428 the regent, Bedford, planned to cross the riv. and marched into those provs. in the S. which adhered to the cause of Charles. The next great event was the battle of Hérings, fought while Bedford was besieging Orleans as the key to the S. (1429). The defeat sustained by the Fr. so discouraged them that Charles was on the point of giving up the contest altogether and leaving the country when the whole face of things was changed by the advent of Joan of Arc. After the coronation of Charles VII. and the burning of the Maid of Orleans the Eng. cause in France rapidly waned. The duke of Bedford quarrelled with the powerful duke of Burgundy and then tried to reconcile his affairs with the Fr. Court, and in 1435 he signed a treaty of friendship with Charles at Arras. Bedford d. in the same year, and before the new regent had reached France, Paris fell into the hands of the Fr. king and in 1444 the Eng. were glad to make a truce for two years. On its expiration Fr. troops overwhelmed Normandy through Maine and Anjou, and

then, turning S., captured Guenne, and by 1451 Calais alone remained to the Eng. and the longdrawn war was at an end. See F. Funck-Brentano, *The Middle Ages*, 1922; E. C. Lodge, *Gascony under English Rule, 1152-1483*, 1926; H. S. Lucas, *The Loio Countries and the Hundred Years' War*, 1929; H. Belloc, *Six British Battles*, 1931 (for Crécy and Poitiers); F. M. Powicke, *Medieval England, 1066-1486*, 1932; *Cambridge Medieval History*, vols. 7 and 8, 1932-36; and H. Pirenne, *Histoire de L'Europe*, 1936.

Huneker, James Gibbons (1860-1921), Amer. musical critic, b. at Philadelphia. For long he was musical critic of the *New York Sun*. Among his works are *Iconoclasts: a Book of Dramatists* (1905), *Visionaries: Fantasies and Fiction* (1905), *Egoists: a Book of Supermen* (1909), *Fritz Listz: a Study* (1911), *The Pathos of Distance* (1913), *Old Foggy, His Musical Opinions and Grotesques* (1913), *New Cosmopolis* (1913), *Baudelaire* (1919), *Steeplejack* (his memoirs, 1921). See Josephine Huneker (ed.) *John Gibbons Hunter, Intimate Letters*, 1937.

Hungary (Magyarország), republic of Central Europe (pop. 9,316,600) lying between the Alps and the Carpathians and including parts of the basin of the middle Danube. Its area is 35,903 sq. m. and it is an entirely landlocked country. The cap. is Budapest. It is one of the succession states of the old Austro-Hungarian Dual Monarchy. The anct. kingdom of H. always took high rank among the states of Europe in respect of ter. and pop. Although its armed forces, with the exception of the Honveds, were formerly united with Austria, yet H. remained an independent state, the head of which was His Majesty Francis Joseph, the apostolic king. By unanimous vote of the National Assembly H. was reconstituted a kingdom in 1920 after having been declared a republic on Nov. 17, 1918. Following the surrender at the end of the Second World War of the Axis powers H. was occupied by the Allied Control Commission. Self-gov. was, nominally, re-estab. in 1945, and after a general election a republic was again declared (Feb. 1, 1946) with a constitutional President and a cabinet. Though constitutionally a kingdom between 1920 and 1946, the throne remained vacant throughout this period, the question of the return of the Hapsburgs having been left unsettled.

H. lies almost in the centre of Europe, and before the First World War had a well-defined frontier formed on the N., N.E., and E. by the Carpathians, and on the S. by the rivs. Danube and Save. The whole country was in the form of an ellipse, from which a neck of land extends to the Adriatic. The Carpathians scarcely rise to the level of permanent snow, as the highest peak in the N. is the Francis Joseph (8736 ft.), and in the S. Nagol (8813 ft.). Sav. peaks range between 5000 and 7000 ft. Those of the High Tatra, being precipitous and without foothills on the S. side, there reveal their full altitude. At the S. extremity of the range the banks of the Danube offer a

series of beautiful pictures. The lower reaches from Hódvász to Orsova are unrivalled in their majestic wildness. It was to H that Europe entrusted the work of overcoming the dangers to navigation in this stretch of whirling water. On the W. three branches of the Alps enter Hungarian ter. One near Visegrád faces the spurs of the Carpathians, which extend right down to the Danube. This part of the riv., flanked by forest clad mts., also offers a magnificent panorama. After the 1st World War H. became considerably smaller. The boundaries between H. and Austria (Czechoslovakia, Yugoslavia and Rumania) were fixed in general terms by the peace treaty of Trianon, June 1920. As a result of this treaty, H.

lost the Körös, Maros, Gran, Sáros, Tisza, and the Vág, but many of these tribs. have been divided by the boundaries determined by the treaty of Trianon. The main canals are the Francis Joseph, between the Danube and the Tisza, and the Béga between the riv. of that name and the Temes. The latter canal, cut by the Romans, was enlarged in 1777. The frontier of H. includes the Lesser Hungarian Plain (Kis Alföld) lying N.W. of the Bükkory forest and the greater part of the Great Hungarian Plain (Nagy Alföld) stretching E. of the Danube. The surface of the Great Plain undulates from 200 to 400 ft. above sea level. Its S. part comprising the Bakka and the Banat



L.V. 1

ON THE HORTOBÁGY PLAIN NEAR DEBRECEN

lost much of her mt. country with practically all her forest lands through the transfer of Transylvania to Rumania of Croatia and Slavonia to Yugoslavia and of Ruthenia to Czechoslovakia. The former at a was approx. 121,400 sq. m. Her pop. was reduced from 11,214,000 to 7,482,000. In 1938 the pop. was about 8,700,000. As the result of a plebiscite since 1920, H. obtained Sopron (Gronberg) from Austria. In 1938, following the forced cession of Sudetic Austria to Germany, most of Ruthenia (1200 sq. m., pop. 900,000) was ceded to H. by Czechoslovakia. The area of H. then became about 40,000 sq. m. and the pop. about 9,600,000. (See also under *History*, below.)

In the gently undulating part of the country which extends along the r. b. of the Danube are found H.'s largest lakes, the Balaton and the Körös, only half of which now belongs to H. The former is 47 m. long, with an area of 286 sq. m., and contains abundance of fish, the largest and most remarkable of which is that known as the fogas. In addition to the Danube, the prin. rivs. of H. are the

no longer belongs to H. Nearly all the area is under successful cultivation (cornfields now take the place of pasture land) and on once sterile sandy wastes there are now flourishing vineyards. The change has been largely due to the introduction of the false acacia (*Robinia pseudo-acacia*), which was the first tree to become acclimated and by its protection and its influence on the climatic conditions, has made possible the growth of the trees. Although the whole of H. is between 47° and 49°, yet there are great divergences in different parts between the minimum mean, and maximum temps. The mean ann. temp. ranges between 18° in the N. to 32° in the S. The Carpathian mts. in the N. and N.E., however, largely protect the lowlands from northern winds. The rainfall also shows great divergences, and decreases in amount eastwards, on the W. slopes of the Bükkory forest the ann. average is between 30-35 in., whereas in the region of the middle Tisza it is 15 in. or even less in dry years.

The chief agric. product of H. is wheat, from which is made the famous Hungarian

flour. Other important products are maize, barley, oats, rye, and other cereals, as well as tobacco. Vineyards occupy about 600,000 ac. Melons and other choice fruits are raised in great abundance. Between three quarters of a million to one million fruit-bearing trees have been planted on the sides of the highroads. Much red pepper, known as paprika, is grown in some cos.

Nature has been very bountiful to H. in respect of minerals. From the Bronze Age onwards these have been dug and smelted. In later periods the Romans did much mining in the country, and derived from it their chief supply of gold. Gold and silver mines are worked by the State. Coal is very abundant, but much of it is of rather inferior quality. The better quality coal is mined in the Mecsek Mt. in the dist. of Pécs. Nearly 14 million tons of coal and lignite were produced in 1941. A plentiful supply of iron-ore keeps sev. large smelting works fully occupied. Copper, lead, antimony, and zinc are also found. Bauxite deposits yield half a million tons in a year. H. possesses the only opal mine in Europe. Enormous quantities of rock-salt exist in E. H. Having been worked for many centuries, some of the salt mines include subterranean excavations of great extent. The salt industry is a monopoly of the State. Asphalt and petroleum are also found. The discovery of the oilfield of Láspe in 1937 increased the output of oil from 300 tons (Jan.-June 1937) to 750,000 tons in 1943. But the most remarkable treasure is natural gas, which during recent years has been found by deep borings in many parts of the country. These Hungarian gas wells are equal in extent and value to those of Pittsburg and other places in America. Mineral waters of various kinds, both hot and cold, spring forth plentifully in many parts, and are found to be very efficacious in the treatment of disease. At Ránk-hirány, near Kassa, a geyser may frequently be seen uplifting a great column of water. Before the Second World War the most famous baths were those of Budapest, Trnseőntelitz, Vizakna, the Baths of Hercules, and Pestyén. At the last-named place radio-active mud may be successfully used in the treatment of rheumatism and allied disorders.

Education is compulsory from 6-15. There are some 8000 elementary schools with a million pupils. There are also middle and continuation schools, and six state universities with over 8000 students (1940). Religious toleration is stated to be one of the fundamental principles of the Hungarian State. Some two-thirds of the Magyars are Rom. Catholics, while the remainder are mostly Calvinist.

The div. of the pop. according to language is approx.: Hungarian (Magyar) 81.4 per cent, Ruthenian 10.4 per cent, Germans (prior to their expulsion in 1945) 8 per cent, with small proportions of Slovaks, Croats, Rumanians, Serbs and others. The pop. of Budapest in 1938 was 1,059,000. Other large cities are Szeged (140,000), Debrecen (127,000),

Kolozsvár (101,000), Kecskemét (85,000), Nagyvárad (84,000), Miskolc (75,000), Vipest (74,000), Pétszentzserhet (73,000), Pécs (72,000), Kispes (61,000) and sev. other tns. with a pop. over 50,000. But H. lost many flourishing tns. through the treaty of Trianon, as well as a number of beauty spots. In Szobon, Brasso, and other cos. near the S.E. frontier there are many large vils. occupied by the Saxons whose forefathers settled there in the twelfth century and received extensive grants of land, which, having been retained as common property, has greatly contributed to the very remarkable prosperity of these communities. Saxons, like all the other subnationalities in H., have retained their own language, religion, and customs. The pastures of H. support a vast number of useful animals. The census of such in 1938 showed that there were 813,000 horses, 1,882,000 cattle, 1,029,000 sheep and 3,110,000 pigs.

*History.*—H. was founded about the year 889 by the then savage Magyars and U'ngri, who were pressing westwards across the Carpathians. St. Stephen (997-1038) instituted the monarchy. It was he, too, who did all he could to encourage his people to embrace Christianity; for he estab. an eccles. polity, and endowed the Infant Church by founding many bishoprics and abbeys. His countrymen cherish his name because of the refining influence his humanity exercised over their untamed and warlike ancestors, and because of the stimulus his practical good sense gave to mining and other peaceful industries. At this time the king only exercised his authority directly over certain privileged tns. and the royal demesnes; nobility and Church were largely self-governing, whilst the nation at large was, for the most part, at the mercy of the landowners. We may here notice the 'Golden Bull,' which King Andrew II. conceded in 1222 to his barons: by this charter he recognised their right to take up arms against the sovereign should he be guilty of any grave infringement of their privileges and guaranteed that the Diet should be summoned annually.

The bulk of this brief sketch will be occupied with an account of the wars with Turkey and of the relationship of H. with the sister kingdom of Austria. The Hungarians first waged war against the Saxon kings, Henry the Fowler and Otto the Great, who gained a great victory over them in 955, and from 1211 onwards they were busily engaged in repelling the persistent advances of the Mongols or Tartars. It was under Louis the Great (1342-82) that they first gained a signal victory over the Turks by the banks of the Maritza. This Louis was king also of Poland, and the importance of such a victory will be appreciated when it is remembered that H. and Poland were the natural bulwarks against Mohammedan aggression on W. Christendom. In 1396 the Sultan Bajazet defeated Sigmund of H. at the battle of Nikopolis, but the disgrace was soon blotted out by the triumphant victories of the soldier-patriot, John Hunyadi,



Panic among the latter's troops, due to the king's death, accounts for the defeat of the Hungarians at Varna (1444), but in 1456, a few months before his death, Hunyadi succeeded in raising the siege of Belgrade and scattering a formidable Ottoman host.

H. reached the summit of her glory under Matthias Corvinus (1458-90), the son of Hunyadi. His successors were weak, and the country, therefore, fell an easy prey to the Turkish invaders. In 1526 these latter, under the leadership of Sultan Suleyman, who had already captured Shabatz and Belgrade, overwhelmed the Hungarians at the battle of Mohacs and slew their king, Louis II. Buda, the cap., was taken, and the splendid library of Matthias wantonly destroyed. Until the Peace of Carlowitz (1699), which concluded a bitter struggle between Austria and the Porte, the greater part of H. remained in Turkish hands, and a Turkish pasha presided in Buda. By that peace the Ottomans were obliged to yield most of their Hungarian conquests, but it was not till 1716, when Prince Eugene defeated them, that H. finally became independent of their sway. Sigismund, who was king of H. from 1392 to 1437, and who was crowned emperor of the Holy Rom. empire in 1433, is the first link between the crowns of H. and Austria. After Louis's death (1526), to which reference has already been made, the sovereignty of his kingdom was conferred on Ferdinand, archduke of Austria, who was elected emperor in 1558. Thenceforward it remained with the Austrian archdukes: until 1687 it was elective, but in that year it was made hereditary in the Hapsburg family.

It must not be thought that H. submitted to Austrian rule without a struggle. The resentment naturally rising from the loss of a national king was aggravated by the folly of many of the emperors. Thus Leopold I. (1657-1705), in his ruthless attempt to re-catholicise the kingdom, was responsible for the wholesale massacre of Protestants and for their alliance in self-defence with their hereditary foes, the Turks; and Joseph II. (1780-90) committed a fatal error in endeavouring to ride rough-shod over all their most time-hallowed institutions. The year of revolution (1848) witnessed an outbreak of intense patriotism. The Hungarians, under the famous Kossuth, Deak, and others, made a desperate attempt to regain their former independence. A new constitution was promulgated, and for a time Kossuth was acknowledged as supreme governor. But in the end the Austrians, who had summoned the Russians to their aid, prevailed, and the old despotic régime was resumed. It was not until 1867 that the dual monarchy was consolidated and Francis Joseph, emperor of Austria, was crowned king of H. Foreign affairs, the army, and finance were controlled by the Delegations—a body composed equally of Austrian and Hungarian deputies. Otherwise the two nations were distinct, and had their own parliament, executive, and laws.

For H. during the First World War, see AUSTRIA-HUNGARY. On Oct. 3, 1918, a revolution broke out in H. with the aim of establishing a Republic. The revolution was successful and on Nov. 16, 1918, H. was proclaimed an independent Republic. Count Michael Karolyi was chosen as President, and the Republic was known as the Hungarian Peoples' Republic. The two Houses of the legislature were abolished, and a Provisional National Council was set up. But in March 1919 there was a second revolution under Bela Kun, who was financed by Russia. This resulted in a Soviet gov. being set up with a dictatorship of the proletariat. When the Republic was proclaimed in 1915 under the presidency of Count Karolyi, there seemed, to the outside world, some prospect of H. settling down to a constitutional form of gov. This was the moment that might have been seized by the Entente powers to prevent discontent and disruption. The moment was missed in the all-absorbing concentration on peace with Germany, with the result that Rumania, Yugoslavia and Czechoslovakia—all with more or less conflicting interests—prompted by the policy of drift to carve up portions of H. in defiance of the Wilsonian principle of 'self-determination.' This naturally aroused the fiercest passions in H. and the people as a whole were ready to follow any party in the country which might offer a plausible remedy. It was always the intention of certain members of the Karolyi administration to ignore Constitutional methods and sooner or later declare openly for the Bolshevik régime of Lenin and Trotsky. With the Hungarian masses chasing, in the spring of 1919, under the prospect of total national ruin, this Mafia or clique, trained in Russian methods and financed by Russia, deluded the Hungarians into the belief that these imported doctrines were the sole panacea for the existing chaos. Rumania invaded H. and expelled Bela Kun, and, after a short Socialist régime, the kingdom was restored in 1920 under Admiral Horthy (q.v.) as regent. Two attempts at restoring the ex-king Karl in 1921 proved abortive.

The revision of the treaty of Trianon, by which in 1920 H. lost three-fifths of her former ter. and two-thirds of her pop., became thenceforth the head and front of Hungarian policy. This Hungarian irredentism aimed at more than the mere recovery of geographical areas, for together with the lost ter. went also a great part of the estates on which the power of the ruling aristocracy was founded. Without such a recovery H. could never aspire to a dominant position in the Danubian basin nor assume the position of bulwark of the W. against the E. an aspiration particularly of the Magyars who regard the peoples E. and S. of Vienna as their cultural and racial inferiors. Mussolini openly sympathised with these aspirations because they seemed to involve the disruption of Yugoslavia, an aim common to Italy and H. The Rome Protocols signed in 1934 between

Italy, H., and Austria offered a show of resistance to the nascent menace of Hitlerite Germany, but even before the Ger. annexation of Austria had brought Germany into contiguity with Italy and H., both those countries had decided to compromise with their formidable neighbour in the hope that together they might appear strong enough to secure some advantages. But the theoretically 'mutual' expansionist aims of Nazi Germany, Fascist Italy, and Horthy's H. were, in practice, certain to clash, though for some time Horthy thought Germany would be too preoccupied with exploiting her territorial gains to become involved in S.E. Europe. When this illusion was dispelled H. proclaimed her entry into the war against Russia as inspired by crusading motives suggested by the anti-Comintern Pact and divorced from any territorial ambitions. It was hoped in H. that their contribution to the invasion of Russia would be restricted to air reconnaissance and garrison duty; but the Voronezh disaster (see under EASTERN FRONT IN SECOND WORLD WAR) of Nov. 1942 altered the aspect of the war in the E. Soon two-thirds of the Hungarian Army—an army built up with the connivance of Hitler in defiance of the Trianon Treaty—was destroyed on the battlefields of the E.; 'mutual' aid, with Germany, indeed meant that Germany always got the best of the bargain. It is true that for her complicity in the dismemberment of Czechoslovakia H. secured a common frontier with Poland; yet, having seen Poland destroyed in 1939, H. in 1940 assisted the Ger. conquest of Rumania by accepting N. Transylvania. H. thus offered to the world an abject spectacle of perfidy and fear. The country which had stabbed Czechoslovakia, Poland, and Rumania in the back was now to stab Yugoslavia. There were, at this time, some ten thousand men in H. who affected aristocratic descent. They ruled or tried to rule the remaining thirteen millions. A majority of them regarded Hitler and his methods with acute distaste. Many of them went to gaol for the frankness of their opinions. The minority, who favoured Hitler, eccentrics like Festetics who formed the first pseudo-Nazi Party in H., never carried much weight. Their collapse came easily, not because the peasants and workers of H. were 'pro-Ger. or pro-Nazi' (they were so only in the areas inhabited by Gers. to the W. of the Danube), but simply because the aristocracy, reinstated under Horthy, had smothered every attempt to imbue the Hungarian masses with the spirit of liberal politics or educate them in democratic institutions. Having secured N. Transylvania, H. paid for her bargain by finding herself burdened with a new frontier rebuilt, politically and economically, in such a manner as to be little else than a Ger. lever for putting pressure alternately on the two victims, H. and Rumania.

The pact of 'eternal friendship' with Yugoslavia signed Dec. 12, 1940, seemed superficially to denote a change of policy,

if not of heart; but on April 11 (1941) Hungarian troops, on Horthy's orders, invaded Yugoslavia and occupied Volvodine. So flagrant an act of aggression, occurring so soon after the ratification of the Treaty, explains the frenzied Hungarian efforts to 'explain' it, especially as Count Teleki, the Prime Minister, had committed suicide eight days prior to the invasion. For Count Teleki was the 'strong' man of H. For over two years following the fall of his predecessor, Imre, early in 1939, he had danced along the tightrope of non-intervention and non-belligerency, the abyss of a Ger. alliance always yawning beneath him. Until the fall of France he was successful and H. was committed to nothing more than tacit non-military support of Germany. After the fall of France this attitude had to change; and gradually, as indicated above, H. came more and more within the Ger. orbit. Hence, following the suicide of Teleki and the invasion of Yugoslavia, the discredited Hungarian gov. built up the legend of the strong man, Teleki, who had resisted Germany's demands; though the only possible resistance, in any valid sense, would have been for H. to stand athwart the path of the Ger. Wehrmacht in the manner of the Yugoslavs. Teleki, by taking his own life, merely left the way open to the Wehrmacht and to his successor to continue a policy which he himself had sponsored but whose logical consequences he was too cowardly to face. Thus H. had become committed to war on Germany's side against the Allies and, after the Brit. failure in Greece, this seemed to be the right side. But with the success of the Red Army, H. began to reconsider her position, especially as the tide of the Russian counter-offensive was sweeping towards the Carpathian basin, and thereby threatening that portion of Transylvania which Hitler had given to Teleki in exchange for the use of the Hungarian army against the Soviet Union. Moreover, the Rumanian army was being decimated at Odessa, and the more deeply the Rumanians became involved, the more feeble, by contrast was H.'s share in building Hitler's New Order (*g.e.*) in which, as Hitler reiterated, each country's status would depend on the extent of its individual positive contribution. But the most pressing need, as H.'s rulers saw it, was to preserve the foundations of the régime and the power on which it rested. Hence in July 1943 was issued a decree authorising the minister of the Interior to form armed auxiliary police formations. As Kallay, Teleki's successor, said, 'In H., as in Germany, there must not be another 1918.' But the factor now disturbing the balance was fear of the effect of military events on public morale, and this explained the obvious signs of panic in Budapest—the talk of declaring Budapest an open city almost before the Allies were within striking distance, and the gov.'s use of the newspaper of the social democratic trade union. The Horthy régime could speak with sev. different voices and assume

various masks: but behind them all was the face of the stubborn, greedy, reactionary landlords who were the real rulers of H.

In Jan. 1944 the increasing rapidity of the Russian advance in the direction of the Carpathians threw Hungarian gov. into great perturbation, and ministers were now telling the people that they must prepare to defend their frontiers against any enemy, from whatsoever quarter he might come. The Gers. took drastic measures to ensure that H. should not desert the Axis (q.v.). Horthy was ordered by Hitler to a conference at Obersalzberg (March 16) where he was forced to agree to the entry of Ger. troops into H. and to the dismissal of the Kallay gov. When Horthy returned to Budapest on March 19 he found that Ger. troops had already entered the city. The new Hungarian gov. under Sztójay now dissolved all the liberal or democratic parties, as well as associations and clubs not of a clearly fascist character; but the chief efforts of the gov. were devoted to the persecution of the Jews who, in spite of all decrees against them, were still playing a considerable part in the economic life of the country. But soon the persecutors of the Jews had to turn about the safety of their own skins. The Russians were already in E. H. and making great progress. The defection of Rumania from the Axis (Aug. 1944) led to a strong movement in H. for coming to terms with the Allies, but the announcement that Russia had promised Transylvania to Rumania was a sufficient inducement to the Hungarians to continue the war. A few days later Russian and Rumanian troops crossed the Rumanian frontier into H. Between Oct. 8-10 they had crossed the Tisa, taken Szeged and advanced to within 60 m. of Budapest and also taken Debreczen. Upon this, Szalasy, leader of the Nyilas or Arrow Cross organization or movement (comprising a score of factions of a pro-Nazi or anti-democratic character produced by the short-sighted repressive policy of the aristocratic oligarchy), carried out a coup d'état (Oct. 15) by which Horthy was forced to resign and Szalasy installed himself as acting-Regent.

Early in Nov. Pest was under siege by a Russian army, while another Russian army, advancing up the Danube from the direction of Yugoslavia, reached Lake Balaton on Dec. 5, and soon the Red Army was closely investing the whole of the cap. Later in the month Gen. Miklos was appointed premier by a Provisional National Assembly to reverse his predecessor's policy. This his provisional gov. did by declaring its readiness to conclude an armistice with Russia and the other countries with which H. was at war and to declare war on Germany. Ger. resistance in Budapest, however, supported by Szalasy's followers, continued till Feb. 13, by which time a large part of the city had been reduced to ruins. During the ensuing few weeks heavy fighting took place between the Russians and the Gers. around Lake Balaton, but about

March 20 the Gers. were forced to give way and within two weeks from that time they had been driven out of H., and with them went the Szulasy gov., while that of Miklos now became the effective gov. for the whole of H. (For details of the Russian invasion of Hungary and the siege of Budapest, see under EASTERN FRONT OR RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR). At Moscow (Jan. 20, 1945) the Provisional National Gov. of Miklos concluded an armistice with the United Nations by which H. undertook to withdraw her troops within the frontiers of H. as they existed at the end of 1937: to pay reparations to Russia, Czechoslovakia, and Yugoslavia to an amount equivalent to 300,000,000 Amer. dollars; while the Vienna Arbitration Awards of 1938 and 1940 assigning N. Transylvania to H. were declared null and void. Recruiting was begun in Feb. for the eight divs. promised by H. for the war against Germany. In March the gov. brought into operation a Land Reform Bill based on the recommendations of the National Peasant Party, involving confiscation of all large estates. On Aug. 27 a Russo-Hungarian Trade Agreement was signed providing for a reciprocal exchange of Hungarian goods and for extensive Soviet participation in the control of Hungarian industry, production, communications, and banking. The privileges thereby conferred on Russia provoked a protest from Great Britain and America, and the ratification of the agreement was deferred by the Hungarian Assembly. In the new gov. the Smallholders, Communist, and Socialist-Communist Parties were all represented, but in the ensuing election held under the Allied Control Commission headed by Marshal Voroshilov, Soviet commander-in-chief, the Smallholders obtained 246 seats against 71 Socialist, 67 Communist, and 22 National Peasant; and Zoltan Tildy, leader of the Smallholders, became Prime Minister. Tildy's coalition gov. on Dec. 11 dissolved the Russo-Hungarian Trading Company formed after the conclusion of the Trading Agreement mentioned above. Later it issued a decree expelling from H. all Ger. speaking residents, numbering 500,000, in addition to the Gers., numbering about 250,000, previously ordered to leave.

H. lost more than two-thirds of her national wealth in the war. She had no cap. to replace the losses suffered in animal stock and agric. machinery. At the same time she had to provide for the feeding of a large Soviet army of occupation. Her communication system was destroyed or dislocated during the three battles. Her reparation liabilities compelled her to pay \$75,000,000, of which two-thirds were due to Russia and the remaining one-third in equal shares to Czechoslovakia and Yugoslavia. In fulfilment of the commercial agreement of Aug. 1945 with the Soviet Union joint Soviet-Hungarian companies were founded for the exploitation of Hungarian bauxite deposits and oilfields. The two greatest sources of H.'s national wealth were thus put under direct Soviet control and

management. Similar companies were founded in respect of Hungarian air communications and riv. navigation. Following the Potsdam agreement all shares in Hungarian undertakings which were in Ger. hands were transferred into Soviet possession. This factor placed Russia in the position of directing the management of many Hungarian industrial undertakings. H.'s only hope was that the W. would realise that by not leaving her to her fate it protected its own spiritual dominion. In March 1947 the United States sent a

elimination of liberal and social-democratic elements and an increasing orientation of H. towards Soviet Russia both in domestic and foreign affairs.

Much reconstruction work has been done since the end of the war. Fighting, by 1915, had destroyed the greater part of H.'s agric. implements, half the cattle and horses, and three quarters of the sheep. All are (1949) being replaced. The permanent reconstruction of main buildings, offices, houses, roads, tramways, buses and trains has been in progress for some time



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▲ TRADITIONAL PROCESSION OF VINEYARD WORKERS IN A HUNGARIAN VILLAGE

note of protest to the Russian chairman of the Allied Control Commission for H. against Soviet interference with the non-Communist Gov. of H. It accused Russia of unlimited interference in the internal affairs of H. by attempting to substitute a communist dictatorship for the existing freely elected gov., and said that the United States was impelled at this time to express its feeling of concern at the political crisis which has been precipitated in H.'

The Peace treaty of Paris with the Allies was ratified by the H. National Assembly on July 2, 1947 and by President Tildy on Aug. 8, 1947. The Russian occupation troops were then officially withdrawn. Another general election took place on Aug. 31, 1947 in which the communists gained only 22 1/2 per cent of the total votes. However, all developments since point to a rising forcible

and continues at remarkable speed. Moreover, hospitals equipped in the most modern way, schools, a univ., nurseries, people's colleges (a revolutionary residential experiment in education at no cost to the 6,000 sons of poor farmers or workers in them) arise here and there throughout the country. H. is a partly-socialised State and so far about 700 enterprises have been nationalised, while more than 3,000 with fewer than 100 employees each remain at present in private hands. The small-holders number about 1,790,000, who have been allotted from five to fifteen acres—the latter figure is for farmers who have gained a diploma. To intensify agriculture under small owners with capital, hundreds of tractor stations are springing up, and by about 1952 some 750 will be completed, each stocked with ten home-manufactured

tractors, sprayers, threshing-machines and other apparatus, together with 25 trained workers. By 1949 the State had nationalised the Church-sponsored schools and dispossessed the clergy of 1,000,000 ac., granting the Church only about 27,000 ac. out of H.'s 20,000,000.

In Feb. 1949 the traditional conception of liberty of conscience of the whole W. world was ruthlessly violated by the barbarous trial before a 'people's court' of Cardinal Josef Mindszenty, archbishop of Esztergom and Prince Primate of H., on charges of disloyalty to the State and 'anti-democratic' activities, followed by conviction and a sentence of life imprisonment and confiscation of all property. Six other persons were also charged with similar offences, including Prof. Justin Baranyai, Prince Paul Esterhazy, and Dr. Andras Zakar, the cardinal's private secretary, all of whom were sentenced to varying terms of imprisonment. The specific charges against the cardinal, which included also alleged violation of foreign exchange regulations and smuggling refugees, were, in themselves, no more than instruments of communist policy devised for the purpose of removing those whom it regarded as its enemies. In essence the trial was really the manifestation of the great conflict between idealist religion, as expressed in Christianity and embodied in the Rom. Church, and materialism as expressed in communism and embodied in the Soviet inspired gov. of H. The cardinal, son of Sualban peasants from the fervently catholic W. of H., had always treated the communists simply as men who were positive believers in a faith without a God, and more to be opposed and prayed for than negotiated with, and that attitude was reinforced by the intractability of his own character, by his right-wing political opinions, and by the tradition of the catholic hierarchy in H., which throughout hist. has always supported the authority of an almost feudal state. At the beginning of 1948, when the feud between him and the communists became open battle, the Cardinal refused to give the new communist state any declaration of loyalty except on the conditions of freedom for all Catholic associations—sev. of which had been banned under the anti-Fascist law—and resumption of diplomatic relations with the Vatican. In the minds of the whole people of H. he had become the undeclared leader of a political opposition as well as of a religious faith. The Communists tried to persuade their own people and the world that they were not against religion, but against the cardinal, whom they accused of seeking to restore a thoroughly unjust and discredited society. In theory religious worship in H. was free; religious teaching compulsory in the nationalised schools, and, officially, all children were bound to attend church. But the new People's Colleges were teaching Marx's doctrine about the rôle of organised religion in hist. The Calvinist Church made its peace with the gov. and negotiated exemption from nationalisation of its lay schools. The cardinal refused

to negotiate and therefore none of the catholic lay schools was exempted, and he always forbade the monks and nuns to teach in the State schools. In short, the cardinal's protest was against those dangers to the human spirit which everywhere in the E. of Europe were unfolding under communism with the result that persecution began with vilification and ended in the tragic farce of his trial. There never was a chance from the moment of his arrest that the cardinal might be acquitted or set free: for the purpose of the 'people's courts,' whether in the Soviet Union or in the communist countries around, was not to try their prisoners for guilt or innocence but to arraign and condemn the enemies of the communist state, and proceedings of this kind were an indispensable part of the process of breaking down the opposition wherever communism had seized power. The appointed end of a conviction following on a 'confession' was, as usual, extorted by third-degree methods, the familiar prelude at this trial to the inevitable sentence. Immediately after the trial the United States gov. considered the possible course of taking the case to the United Nations. The House of Representatives unanimously adopted a resolution urging the United States gov. to protest against H.'s treatment of the cardinal—through the United Nations or by other 'appropriate' means. Numerous Hungarian officials in the United States, including the Acting-consul general, in New York prepared to leave the country. Dr. Evatt, minister of external affairs, Australia, in the House of Representatives, said that the issue was much broader than the treatment of the cardinal, and appeared to involve the general question of rights guaranteed under the treaty of peace with H. to which Australia was a party, and which included freedom of religion and freedom of speech. He did not exclude a possible miscarriage of justice not only in relation to the cardinal but also to the leaders of the calvinist and lutheran churches in H. Thus the matter was destined to be brought before the General Assembly of the United Nations. Mr. Ernest Bevin, Brit. foreign secretary, protested to the Hungarian minister in London at the Hungarian gov.'s refusal to allow representatives of the Brit. legation in Budapest to attend the trial. He also directed the Minister's attention to the very strong feeling evinced by public opinion in Britain over the whole circumstances of the case.

*Language.*—Few languages offer more fascination to the philologist than Hungarian. Until the seventeenth century it seemed a pure anomaly, for it was clearly not even a distant cousin to the neighbouring Ger., Wallachian, or Russian. In 1769 an astronomer, John Sajnovics, visited the Laplanders in Norway, and was impressed by the similarity of their language to his own. So vivid was this impression that he forgot for the moment about his astronomy and wrote instead a book (in Lat.) to demonstrate the affinity between the two tongues. Since his day

many other facts have come to light which go to prove that Magyar belongs with Vögnland Ostiak to the Ugric branch of the Finno-Ugric div. of the Ural-Altaic family. There follows a brief enumeration of the most striking peculiarities of Magyar: (1) It is a language of affixes. *Atyamert* means 'for my father, *m* being 'my' and *ert* 'for.' (2) The active verbs have definite and indefinite forms: *látom* means 'I see him, her, or it,' and *látok* merely 'I see.' (3) There is no gender: 'he,' 'she,' and 'it' are not even distinguished. (4) Extra syllables give the verb a potential, causative, or frequentative sense: *verhet* means 'he can beat'; *verel*, 'he causes to beat'; *verget*, 'he often beats.' (5) Nouns have possessive suffixes, which vary according to number: *tollunk*, 'our pen'; *tollaink* 'our pens.' Magyar is, moreover, rich in verbal derivatives, has a copious vocabulary, and is decidedly musical—and therefore adapted to poetry—by reason of the harmony of its consonants and vowels.

**Literature.**—The national literature of H. is, comparatively speaking, young. Indeed, there was little life in it till well on in the eighteenth century. The cause if this is not far to seek. Ever since the priests from Germany and Italy introduced Christianity during the eleventh century, Lat. has been the official language. It was spoken at court and in the churches: it was taught in the higher schools, and so became the language of the educated classes, and finally it was introduced into the administration. Lat. was not discontinued in the schools till 1790, and was talked in Parliament as late as 1825. The oldest written fragment in Magyar belongs to a funeral oration dating from the early thirteenth century. During the pre-Reformation and Reformation periods (1437-1606) men of letters were chiefly engaged either in translating portions of the Bible or in writing voluminous rhyming chronicles. King Matthias Hunyadi was a true Medici to his countrymen in that he made his court a centre of intellectual and artistic life, gathered together a great library, and invited to his kingdom men of learning from all parts. In 1473 the first book was printed in H., namely, *Hudai Krónika*, a hist. of H. up to his day. During the seventeenth century many writers distinguished themselves in the fields of theology and philology, but none attained to such high honour as the poets Nicholas Zrínyi (1620-61) and Stephen Gyongyösi (1629-1705). The former wrote a national epic, the *Zrínyiász*, after the manner of *Tasso*, in which he sang of the powers of his ancestors. There is life in his character drawing, and his language is sincerely emotional, if unpolished. The *Venus of Muring* of Gyongyösi, though spoilt somewhat by an excess of mythology and metaphor, is redolent with an Ovidian grace of melody and descriptive charm. In the eighteenth century, not unjustly called the 'age of decadence,' the only outstanding name is that of Francis Faludi (d. 1779), the Jesuit, who developed

a singularly pure and refined style both in his trans. and in his original songs and idylls. From 1772 to 1830 there was a revival in literature and also a conscientious effort to reform the language. George Bessenyei (1747-1811) and Benedict Virag (d. 1830) are both representative of the classical school, who took Lat. poets as their model. The former dreamed of being the Voltaire of H., whilst Virag wrote epistles and odes which fully account for his proud title of 'the Magyar Horace.' Francis Kazinczy (1759-1831), who wrote readable didactic verse and good biography in prose, was the leader of the movement for language reform. Alexander Kisfaludy (1772-1844), the author of the famous lyrics, *Himfy's Love*, was brother to the more celebrated Charles Kisfaludy (1788-1830), who may truly be said to have regenerated, if not created, national drama. Two other notable poets of this period are Francis Kolcsy (1790-1838), the idealist, who composed the *Hymnusz*, now a national anthem, and Joseph Katona (1791-1830), who wrote the fine historical tragedy *Bánk Bán* (1820), and is considered to be one of the greatest of Hungarian dramatic poets. One of the foremost of H.'s poets is Michael Vorosmarty (1800-1855). Had he left only his trans. of Shakespeare behind him, his name would have lived; but as it is there are many fine lyrics and epics, such as the woefully tragic *Two Castles*, which prove Vorosmarty to be a great original poet besides an excellent translator. In the splendour of his lyrics, however, he was surpassed by Alexander Petöfi (1823-1849), whose freshness, rapture, sincerity, and passionate love of Nature have rarely been equalled in the poetry of any nation. And side by side with Petöfi will ever stand John Arany (1817-1882). In his immortal epics, *Toldi* and *The Death of Huda*, as in his ballads, he absorbed all that is best in the old Hun and Magyar legend, whilst in creating Nicholas Toldi he touched indeed the very depths of Hungarian character. The earliest historical novelist was Baron Nicholas Jósika (1794-1865), an enthusiastic admirer of Scott. The humour, spontaneous faculty for invention, and irrepressible delight in storytelling of Maurus Jókai (1825-1904), explain at once his unbounded popularity as a writer of fiction.

The years 1825-49 proved a period of national revival, but this period was followed by one of less distinction, popular literature giving way to a literature of modern society. Kalman Tóth (1831-81), a lyric poet, was a follower of Petöfi, while many poets of this time were followers of Arany, such as Joseph Kiss in his ballads. Edward Székely (1814-1878), a prolific dramatist, supplied the Hungarian stage with comedies and national historical dramas. Among prose-writers the followers of Jókai's Kolman Mikszáth (1817-1910), Géza Gárdonyi (1863-1922) and Francis Herczeg (b. 1863), who is also a successful dramatist, produced good work. Mikszáth, in his turn, has had considerable influence on writers

such as Victor Rókosi and Alexius Benedek.

In mod. Hungarian drama three schools may be discerned: the folk-drama, represented by Edward Tóth, the neo-romantic drama, to which such writers as Eugen Rákosi and Louis Dóczy belong, and the school of Gregor Csiky to which, among others, Francis Herczeg belongs. Naturalism in modern literature is represented by S. Bródy (1863-1921), T. Kóbor (b. 1867), and Z. Ambrus (1861-1932). The periodical 'Nyugat' (West) founded in 1908 by Ignatus (Hugo Velgelesberg, b. 1869) exerted a modernistic influence and counted among its chief contributors the lyric poets E. Ady (1877-1919) and D. Kosztolányi (1884-1936), M. Babits (1883-1941), stylist and translator, and the naturalistic novelist, Z. Móricz (1879-1942), D. Szabós (1879-1945) and L. Zilahy (b. 1892 and living in America) exerted a great influence after the First World War. Folk-literature is represented by the novelist J. Kodolányi (b. 1899), and the poets G. Illyés (b. 1902) and J. Erdelyi (b. 1896). Among Hungarian authors with an international reputation and living abroad are: F. Molnár (b. 1878), J. J. Foldes (b. 1903), M. László (b. 1895), and F. Kormendi (b. 1900).

Art.—II. possesses a beautiful national art, but much of importance from the Middle Ages was destroyed in the wars with the Turks. The flat-roofed basilicas often show Lombardic and Byzantine influence in their decorative details. The abbey church at Ják (thirteenth century) shows the transition to the Gothic style which came to II. from France. Among other important buildings dating from the fourteenth to sixteenth centuries are St. Michael's Chapel and the Cathedral in Koszice (now in Czechoslovakia), the Black Church in Brassó (Transylvania, 1383-1421), the Benedictine Church in Sopron, and a number of castles built by kings and nobles, e.g. that of Vajdahunyad. Biblical subjects began to be used in the twelfth century (e.g. the crypt in Pécs) and there are tombs and wooden and bronze sculptures which date from the fourteenth century (e.g. the statue of St. George in Prague by the brothers Kolozsvári).

Renaissance art-forms were, with few exceptions, imported from Italy rather than of native growth, and little has been preserved. There was, however, a native revival in the Baroque period, which produced somewhat ostentatious churches (the cathedrals of Győr, Nyitra, Kalocsa) and palaces, and many W. H. tns., such as Győr and Pozsony received their present stamp at this time. Many II. artists, such as the two painters Mányoki and Bogdán, worked abroad, whereas much was done in II. by Austrian artists. The representative architects in the class. period were M. Pollack (National Museum, Budapest) and J. Hiltl, who designed the cathedral at Eger. The second half of the nineteenth century saw the creation of the main buildings of Budapest: the parliament (A. Steindl), opera (M. Yul, Kurio (A. Hauszmann) etc. Other archi-

tecs were F. Schulek, G. Petschacher and Ö. Lechner, who exerted a considerable influence on the succeeding generation (K. Kós, E. Thoroczkai-Wiegand). In sculpture the class work of I. Ferenczy was followed by that of A. Stróbl, G. Zala and A. Huszár, which showed a tendency towards allegory. E. Teka and L. Damkö produced mainly bronze and terracotta figures. At the present day there are two trends: one towards realism, represented by such artists as L. Petri, I. Pásztor, Z. Kisfaludi-Stróbl and I. Szentgyörgyi and another towards a stylised formalism represented by I. Sinay, F. Pátzay, Ö. F. Beck, M. Vedres, E. Kalmár, G. Csorba and A. Kocsis.

Painting, after its early beginnings in the Byzantine style, made great developments from the fourteenth to the beginning of the sixteenth century. A fine example is the altar-piece at Esztergom. In the first half of the nineteenth century painting, influenced by Vienna, moved from classicism to romanticism (Markó Barabás). After 1848 national hist. became the main theme (Madarász, Benczúr). Chief among genre and landscape painters were Paál, Munkácsy, Mészöly, Mednyánszky. French naturalism and impressionism influenced Iványi-Grunwald, Ferenczy, Thorma, Itéti, Vaszary, Fényes, Csók, Kornstock and Rippel-Rónay among others. Most recently painters such as Márty, Czöbel, Rudnay, Egyri and Bernath have come to the fore still under the influence of expressionism.

H. music occupies a characteristic position between E. and W. The oriental streak is clearly discernible in the folk-music, but apart from this H. music was, until recently, completely W. European in style and tonality, when B. Bartók and Z. Kodály, both of whom are extremely interested in folk-music, made great use of it in their own compositions, thus giving their music a markedly national character. It was mainly due to Fr. Liszt, Fr. Erkel (nineteenth century), and their predecessors S. Tinódi (sixteenth century) and J. Kajoni (seventeenth century), that an interest in H. music was awakened in W. Europe. The chief modern composers are: Ádám, G. Kós, L. Bardos and A. Veress, all influenced by Bartók and Kodály.

See also BALKANS; BUDAPEST; DANUBE; RIVER; DANUBIAN QUESTION; MAGYARS.

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**Hunger**, indefinite sensation usually referred to the stomach, but also combined with a non-localised feeling of weakness or faintness. Normal H. is not of necessity strictly periodic, but training may result in its recurrence becoming regular. In its earliest stages no suffering accompanies it, but later a gnawing pain sets in at the epigastrium, followed by weakness, and finally by the delirium of starvation. The general faintness is normally removed by the introduction of solid or semi-solid nutriment into the alimentary tract, even though the stomach is not used, as in the passage of easily assimilated food into the large intestine. The almost immediate alleviation of suffering may be caused by the free secretion of gastric juice which may be brought about by the ingestion of indigestible substances. Abnormal H. accompanies some diseases, particularly those associated with marasmus. Other diseases cause morbid appetites, as the craving for chalk and lime, etc.

Hungerford, par. and tn. of Berkshire, England, on the Wilts border. The aet. name was Ingelford, meaning 'Ford of the

Angles.' It is situated on the R. Kennet, 9 m. N.W. of Newbury and 27 m. S.W. of Reading, and is a hunting and fishing centre. Pop. 9500.

Huningen (Fr. *Huningue*), tn. and former fortress of the dept. of Haut-Rhin, Alsace, situated on the l. b. of the Rhine, 3 m. N. of Basle. It was once one of the prin. ports on the E. Fr. frontier. Pop. 3000.

Huns (Lat. *Hunni*, Gk. *Ουνοί*), wild nomadic people who were busily engaged in the early centuries A.D. in sweeping away old boundaries and in over-running the fers. of nations which time had long since hallowed. Gibbon lays emphasis on their 'broad shoulders, flat noses, and small black eyes deeply buried in the head' and other authorities speak of their swarthy complexions, rude manners, high-pitched voices, and frequent deformities. In the confused narratives of the Dark Ages historians can distinguish four migratory tribes to which the name of H. has been applied: (1) The Magyars were Hunnish invaders of Hungary from A.D. 898, whilst the race of modern Hungarians was probably formed by these Magyars coalescing with the Kumans and other hordes, who had preceded them in the march westwards. (2) The White H., or Ephialtes, inhabited Bactria and the tracts between the Oxus and the Caspian in the days of Attila's conquests. In 484 they inflicted a crushing defeat on their Persian neighbours under Peroz, who was slain in battle, but during the following century their power was broken by the aggressive Turks. (3) The Hūnas, who made inroads into India were contemporary with the Ephialtes, and undoubtedly belonged to the same wave of barbarian migration. (4) But last, has most to say about those savage hordes of H. who contributed so largely to the disintegration of the Rom. empire, and who from A.D. 372 to 453 were continually threatening, nay thrusting back, imperial confines. An army of H., under Balamir, overcame the Hant, who dwelt between the Volga and the Don, completely disorganised the empire of the Ostrogoths (Göetungn), and finally routed the Visigoths (Tervingi). These tribes were driven to seek new homes between the Pruth and Danube, but in time their ferocious conquerors wrested even these lands from them and obliged them to retreat still farther, this time beyond the Danubian frontier. Two facts show that Rom. supremacy was already on the wane: Emperors had begun to enlist the arms of the Hunnish invaders against other foes, and in 132 Theodosius II. agreed to buy peace from Rhmas or Rugilas, their king, by an ann. payment of 350 pounds of gold. But the peace was hollow, and the death of Rhmas alone staved off the inevitable humiliation of Rome. Attila and Bleda succeeded Rhmas, their uncle, and were so formidable as to secure a double tribute. Under these chiefs the H. laid waste Scythia and Media, threatened Persia, sacked the Rom. city of Margus in the E. (441) and Sirmium in the W. In 445 Attila stood with his victorious



armies before the walls of Constantinople; in 451 his progress westward across the Rhine was only stayed after a terrible battle on the Catalaunian plains (near Méry-sur-Seine), and in the following year, after razing Aquileia and the cities of Venice, Attila was confronted with Pope Leo I. on the banks of the Minio—an interview which ended in a retreat of the H. beyond the Alps. Next year Attila d., and in 454 the Goths, Gopidæ, and Suevi avenged his insolent victories near the R. Nctad in Pannonia, where 30,000 H. were slain. The Hunnish nation never survived this calamitous defeat; their tribes dispersed, some settling in the Dobrudzha, others in Dacia, and others, again, returning to their old haunts—the S. steppes of modern Russia. Perhaps the Bulgarians are at the root a Hunnish people. See M. A. Czaplicka, *Turks of Central Asia*, 1918; R. Saffet, *Contributions à une sincère histoire d'Attila*, 1934; F. Lot, *The Invasion Germ.*, 1935; R. Grosset, *L'Empire des Steppes*, 1939.

Hunstanton, watering-place of Norfolk, England, situated on the Wash, 15 m. N.E. of King's Lynn. New H. stands about 1 m. from the old vil., and possesses a pier, a wide expanse of sand, and a lighthouse with a fixed light, visible for 16 m. Pop. 3500.

Hunt, Alfred William (1830-90), Eng. painter, b. in Liverpool, son of Andrew H., a landscape painter. He won the Newdigate Prize poem in 1851. He exhibited landscapes in oil and water-colour at the Royal Academy, and took up painting professionally in 1861. His best pictures are in water-colour. Fine examples are in the Tate Gallery, London, and the Walker Art Gallery, Liverpool. See F. Wedmore, in *Magazine of Art*, 1891.

Hunt, Henry (1773-1835), political agitator, the son of a Wiltshire farmer, on whose land he worked. For some years he worked in conjunction with Cobbett, and in 1810 they shared the same cell in goal, to which they had been committed for their political opinions. He more than once stood for Parliament, but he was never elected. He was an active member of the Hampton Club, and he presided over the meeting in St. Peter's Field, Manchester, in Aug. 1819, which, owing to the intervention of the soldiery, is known as the Peterloo Massacre. There is no doubt that he was of value to the cause of which he was an advocate. He pub. his *Memoirs* in 1820, and his *Correspondence* appeared in the same year. There is a worthless biography by R. Hulse (1836).

Hunt, Leigh (James Henry Leigh-) (1784-1859), author, was educated at Christ's Hospital School, London, to which he went from 1792. He was a shy, nervous, sensitive lad, and at a very early age he read poetry and began to write verses, which his father collected and pub. in 1801 under the title of *Juvenilia*, or *A Collection of Poems written between the ages of twelve and sixteen*, by J. H. L. Hunt. Owing to the elder Hunt's energy, a large subscription was obtained, and the little book passed through four eds. in three

years. The quality of the verse was not such as to merit much success. In 1805 H. began to contribute dramatic criticism to the *News*, and a selection of his articles was reprinted in book form two years later. In 1808 H. and his brother John started a newspaper, the *Examiner*, and for thirteen years wrote largely in its columns on many subjects, taking part not only in its literary direction, but also contributing political leaders. His persistent attacks on the character of the Prince Regent led to a gov. prosecution



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of the brothers in 1812, and they were sentenced to two years' imprisonment. It was while he was in prison that Thomas Moore introduced him to Byron, which was the beginning of the famous friendship between these men. At this time, too, he made the acquaintance of Keats, and introduced him to Shelley. He pub. sev. vols. of poems, including *The Story of Rimini* (1816). In 1822 H. went to Italy to join Byron, with whom later he quarrelled. In 1825 he returned to England, and three years later he pub. *Lord Byron and some of his Contemporaries*, which brought a hornet's nest about his ears. All this time he was working very hard, contributing to the newspapers, editing periodicals, writing dramatic criticism and book-reviews, and every now and then issuing a book. He wrote a novel *Sir Ralph Lusher* (1832), and a vol. on *Christianism*, and he reprinted the best of his papers which had appeared in the *Indicator* and the *Companion* (1830). His play *A Legend of Florence* was produced at Covent Garden in 1840. Four years later appeared one of his best-known books, *The Town*, and in 1855 appeared the most delightful of all his books, *The Old Court Suburb, or Memorials of Kensington* (reprinted 1902), when it was ed. by Austen Dobson. He had earlier, in 1850, pub. his delightful *Autobiography*, which is certainly, and deservedly, the most popular of all his works, and won

high praise from Carlyle. It was as a poet that H. desired to achieve fame, but it cannot be said that his ambition was ever satisfied. His verse was easy and agreeable, but it lacks dignity: he had not the lyrical gift, and has never taken the place he desired to fill in the roll of Eng. poets. It is as an essayist that he has his claim to remembrance. In this branch of letters he does not, of course, rank with Lamb or Hazlitt, but he has undoubtedly, on a humbler plane, an individuality and a charm of his own. His wide reading and his knowledge of the world gave him ample scope for finding suitable subjects for his innumerable papers, but he is never happier than when writing of 'My Books,' or discoursing about London, or describing the country. His *Autobiography*, and his *Correspondence*, ed. by his eldest son (1862), are the prin. authorities for his life. The character of Harold Skimpole, the sponging amateur artist, in Dickens' *Bleak House*, was founded on H. and had to be altered on account of its close resemblance. See S. Collins, *Essays*, 1883; W. Hazlitt, *The Spirit of the Age*, 1891 (Eyreman's Library, 1910); lives by E. Blunden, 1930, and L. Landré, 1936, and also the *Autobiography*, ed. with notes by J. E. Morpurgo, 1949.

Hunt, Richard Morris (1828-95), Amer. architect, b. at Brattleborough, Vermont. He came to Europe to study, chiefly in Paris, where, in 1851, he was appointed inspector of works on the buildings connecting the Tuilleries with the Louvre, and where he designed the Pavillon de la Bibliothèque. Returning to New York in 1855, he designed the Lenox Library, the Stuyvesant, and Tribune buildings; also public buildings in Princeton and Yale. He obtained the gold medal of the Institute of Brit. Architects for his Administration Building at the Chicago Exhibition (1893). He did much to raise Amer. architecture in the opinion of other countries, and helped to found the Amer. Institute of Architects. There is a fine memorial to him in the wall of Central Park, New York City.

Hunt, Thomas Sterry (1826-92), Amer. chemist and geologist, b. at Norwich, Connecticut. He wrote a remarkable 'Essay on the History of the Names Cambrian and Silurian' (*Canadian Naturalist*, 1872), and his works include *Chemical and Geological Essays* (1875), *Mineral Physiology and Physiography* (1886), *A New Basis for Chemistry* (1887), and *Systematic Mineralogy* (1891).

Hunt, William Henry (1790-1861), Eng. water-colour painter, b. in London, and studied with John Varley. He was a prominent member of the Society of Painters in Water Colours, and may be regarded as one of the chief figures in the great Eng. school. His prin. pictures were of interiors, figures, and still life. Many fine examples are in the Victoria and Albert Museum, S. Kensington.

Hunt, William Holman (1827-1910), Eng. painter, b. in London, joined the Royal Academy schools (1844), gaining admission to the exhibition with 'Hark

in 1846. In 1848 the Pre-Raphaelite Brotherhood was started with Rossetti, Millais, and others, inspired by the technique of Ford Madox Brown. H.'s earlier pictures include 'Rienzi' (1818), 'Valentine and Sylvia' (1851, greatly praised by Ruskin), 'A Hiredling Shepherd' (1852), 'Strayed Sheep' (1852), and 'Claudio and Isabella' (1853). In 1854 came, perhaps, his greatest and certainly most successful religious picture, 'The Light of the World,' presented to Keble College, Oxford, by the purchaser, Mr. Combe, of which a modified replica was painted in 1901 and exhibited in the chief cities of the Brit. empire. A visit to Palestine produced 'The Scapegoat' (1856), a meticulous study of the scenery of the Dead Sea; 'The Finding of Our Saviour in the Temple' (1860), now at Birmingham; 'The Shadow of Death' (exhibited 1873), representing a shadow of the Crucifixion thrown on the workshop wall by the stretched arms of Jesus, is at Manchester; 'The Triumph of the Innocents,' of which there are two pictures, at Liverpool and Birmingham, begun in 1875, was not finished till 1885. His best-known later picture is 'May Day on Magdalen Tower, Oxford' (1891). H. remained to the last a fervent adherent to the principles of the Pre-Raphaelites. The best statement of his ideals and of the inner hist. of the movement is in his *History of Pre-Raphaelitism* (1907). He received the Order of Merit, and was buried in St. Paul's. See Ford Madox Brown, *Pre-Raphaelite Diaries and Letters*, 1900; J. Phyllian, *Pre-Raphaelite Brotherhood*, 1906; L. Housman, *Pre-Raphaelites in Art and Poetry*, 1933.

Hunter, George (1863-1916), Scottish missionary, b. at Aberdeen. At 26, left Scotland, and set out on the long trek to Chinese Turkestan. At Urumsai, cap. of Chinese Zungaria, he built himself a rough home; and for many years he travelled in his little Chinese cart on the trade routes across the high plateau, conveying the Scriptures, trans. by him into the various local dialects. In H.'s early days, Chinese wore pigtails; so he grew his own, and wore a simple hide gown. One Mongol servant was his only usual companion, and provided the same meal every day for 50 years—boiled mutton and rice. Robbers were not his only danger, but he was on good terms with camelmen, Qazaq farmers, and Sarter merchants trading in wool, skins, and bricks of tea. Unselfish and devoted, he had great influence on the wandering folk of Chinese Turkestan. When war came in 1939, his presence on the border of the Soviet Union aroused the suspicion of the Russian authorities; he was watched, arrested as a 'secret agent', and kept under terrible conditions in a Soviet gaol. He was refused a copy of the Bible, but knowing most of it by heart, he recited it aloud. Released and flown back into China proper, where he d. in 1946. See Mildred Cable and Francesa French, *George Hunter, Apostle of Turkestan*, 1948. Hunter, John (1728-93), Scottish surgeon and anatomist, b. at Long Calder-

wood, E. Kilbride, Lanarkshire; son of John H., and brother of Wm. H., whom he assisted in dissection in London (1748). He attended Chelsea Hospital under Cheselden, 1750. In 1751 he became pupil at St. Bartholomew's. A Master of Anatomy, Surgeon's Corporation, 1753. Surgeon's pupil, St. George's Hospital, 1751; house-surgeon, 1756. Matriculated,



JOHN HUNTER

St. Mary Hall, Oxford, 1755; but classical studies bored him. In 1761 he took part in an expedition to Belleisle where he studied the conditions of the coagulation of the blood, and served with the Brit. army in Portugal in 1762, acquiring knowledge of gunshot wounds and inflammation. In 1763 he started a practice in London, but devoted his spare time to dissection and experiment. He became surgeon to St. George's Hospital, 1768; surgeon-extraord. to the king, 1776; deputy-surgeon-general to the Army, 1780. His works include many papers contributed to *Philosophical Transactions* and *A Treatise on the Natural History of the Human Teeth* (1771-1778), *On the Digestion of the Stomach after Death* (1784), *A Treatise on the Venereal Disease* (1786), *Observations on Certain Parts of the Animal Economy* (1786), *A Treatise on the Blood, Inflammation, and Gunshot Wounds* (1794), *Observations and Reflections on Geology*, pub. posthumously. H. made a notable surgical advance in the tying of the artery about the seat of disease in aneurism; indeed, he has been called by some the founder of scientific surgery. He was exceedingly industrious; but he was a poor lecturer, and never had many pupils. He was a bigoted Tory in politics, choleric, and stiff-necked. He died suddenly after a dispute at a board-meeting at St. George's Hospital.

Hunter, William (1718-83), doctor and

anatomist, b. in Lanarkshire. He studied at Glasgow, Edinburgh, and St. George's Hospital, London. He became the leading obstetrician of his time, and was consulted by Queen Charlotte, to whom he was appointed physician extraordinary in 1764. He was the first prof. of anatomy in the Royal Academy (1768), and president of the Medical Society (1781). His chief work is *On the Human Gravid Uterus* (1774, 1st.), the material for which took him twenty-five years to collect. It has been ed. by Baillie (1794) and Rigby (1813). He also pub. *Medical Commentaries* (1762-64), and important papers on *Medical Observations and Inquiries*.

Hunter, Sir William Wilson (1840-1900), Indian civil servant and historian, was educated at Glasgow. In 1869 he was appointed by Lord Mayo to organise a statistical survey of the Indian Empire. This work occupied him for twelve years, the compilation reaching 128 vols., but the whole was condensed into *The Imperial Gazetteer of India* (9 vols., 1881), his article on 'India' being reissued in 1895 as *The Indian Empire: its Peoples, History, and Products*. He also pub. a *Comparative Dictionary of Non-Aryan Languages of India and High Asia* (1868).

Hunter, see under HORNES.

Hunter River, Coquon, or Coal River, riv. of New S. Wales, Australia, which rises in the Liverpool range. Its basin is an immense coal-field, and it flows into the Pacific at Port Hunter after a winding course of 300 m.

Hunter's Moon, full moon next after the harvest moon, following the Autumn Equinox. It rises an hr. after sunset during the middle of Oct.

Hunterville, tn. of N. Island, New Zealand, in the prov. of Rangitikei. Pop. 1000.

Hunting, see BIG GAME, FOX HUNTING, DILK STALKING, and SHOOTING.

Huntingdon, mkrt. tn. and municipal bor., and the co. tn. of Huntingdonshire, England, situated on the l. b. of the Ouse, 60 m. N. of London. It owes its early importance to the crossing of the riv. by Fensie Street, which forms the main thoroughfare of the tn. In the tenth century the Danes constructed a defensive earthwork, or 'burh' here, remains of which may be seen on Mill Common. Edward the Elder captured the tn. in 921, but it was destroyed by the Danes in 1010. It is now the agric. centre of the dist., but the anct. mkrt., held on Saturdays, has decreased greatly in importance. The bor. is governed by a mayor, four aldermen and twelve councillors, and possesses a fine but incomplete series of Royal charters from 1201. The seventeenth century mace has acquired world-wide notoriety from its curious hist.; the silver head was pledged by the almost-bankrupt corporation to Leicester in the eighteenth century and a cheap imitation was substituted, which still remains. The leading industries are a vegetable canning factory and the manuf. of rubber fittings for motor cars etc.; lesser industries are confectionery, mineral water works, pottery and radio parts. Brewing is

carried on by the successor, of the Chequer Inn and Maiting, headquarters of King Charles in 1645 after he had expelled the Parliamentarians from the tn. In the middle ages there were three monasteries, three hospitals and sixteen par churches. Only two of the churches have survived. All Saints dating from the thirteenth to sixteenth centuries, and St. Mary's, twelfth to seventeenth centuries. The fine fourteenth century tower partly fell in 1607, destroying the N aisle and arcade, which were rebuilt between 1608 and 1620. Hinchinbrooke, N W of the tn, (the seat of the earl of Sandwich) stands on the site of a nunnery, reputed to have been founded by Wm the Conqueror. It is a building of various dates from the sixteenth to twentieth centuries but incorporates remains of the earlier work. The gatehouse is particularly fine. Cromwell House, in the High Street, stands on the site of an Augustinian Friary, but is mostly modern. Here was born Oliver Cromwell. The Augustinian Priory (quite distinct from the Friary) was founded in the twelfth century. The modern cemetery of the tn, stands on its site, and foundations of the old buildings are often encountered in digging graves. In the narrowest part of the High Street, facing the chancel of All Saints church, is the Old Grammar School formerly the hospital of St. John the Baptist, a twelfth century foundation. Here Oliver Cromwell went to school. The much restored building is of Norman date and retains a large W doorway with zig-zag ornamentation. Blocked arches once opened into aisle and another, also blocked, opened into a chapel. The modern Grammar School was built in 1938 and replaced the old building in the High Street. At the S end of the High Street is the site of the castle, now a public open space. The earthworks, constructed in 1068, and amongst the finest of their type, consist of a moat with a bailey partly surrounded by rim parts, and a deep ditch. The Huntingdon to Cambridge railway cuts across the mound, dividing the site into two disconnected parts. Close by is the beautiful medieval bridge of six arches built in 1322, in the centre of the parapet arc slots marking the boundary separating H. from the bor of Godmanchester. On the E side of the High Street opposite the entrance to the Castle, is the eighteenth century gaol, now converted into houses. It has some fine brick luncheon in the walling of which are iron staples for confining prisoners. There are many good houses of the seventeenth and eighteenth centuries, chief of which are Walden House and Terrar House, both seventeenth century, Whitwell House, Cowper House, Monks House and Castle Hill House, all eighteenth century. The George Hotel has a seventeenth century galleried courtyard. The red brick tn hall was built in 1745 by private subscription, and contains some interesting paintings of royalty and local celebrities. A feature of the tn. is the extensive commons which almost encircle it and

provide many pleasant walks, they are the property of the Freeman. There are also walks along the banks of the Ouse as far as Hartford. Pop 4700.

Huntingdon, bor and co seat of H co., Pennsylvania U S A, on the R Juniata, 100 m N of Pittsburgh. It is built on ground sloping to the riv, which is used for water power, and the surrounding country is rich in coal, iron, limestone, and fireclay. The tn was named after the countess of H in 1767. Pop 3000.

Huntingdon, Selma Hastings, Countess of (1707-51), daughter of Washington Shirley second earl of Ferris and married in 1728. Theophilus until earl of H, of Donington Park Leicestershire. She was converted to Methodism by her sister in law Lady Margaret Hastings and hence forth devoted most of her time and energy to religious and religious work. She became intimate with George Whitefield and later with the Wesleys and was a member of the first Methodist society founded in 1739 in London in 1739. She died in a hospital in Brighton in 1751 and afterwards at such other fashionable resorts. Bath and Tunbridge Wells. In the topographical literature to her connection in mind of the upper classes (see COUNTESS OF HUNTINGDON CONNECTION). In 1739 she edited *Præterea* a House in N. W. side of the building institute for members of her religious conviction and subsequently extended her operations to America though she never visited that continent. Survives by J. B. Higgins, 1891 and Sarah Taylor, 1907.

Huntingdonians, see COUNTESS OF HUNTINGDON CONNECTION.

Huntingdonshire, or Hunts, inland co of England an archdeaconry in the diocese of Ely in the prov of Cantuariensis. The surface of the co. which is all below 500 ft is a gentle undulating W slope and the soil whilst the E and N E form part of the flint district. The principal rivers are the Ouse and the Nen. The chief industries are agriculture and grazing, there are no minerals of importance and other industries, which are also not very important, include brick making, pottery making, brewing, milking, leather and iron working. From a geological point of view the whole co. save for a small portion in the N E, belongs to the Old Red ks. Area of administrative co 23 sq. m. Pop 62,000. See W. M. N. *Huntingdonshire* 1920. A. Moe *Huntingdonshire and Bedfordshire*, 1939.

Huntington, name of sev places in the U S A. (1) The co seat of H co., Indiana, on the R Little, 25 m S W of Fort Wayne. Pop 15,000. (2) City and co seat of Cabell co in the state of W. Virginia, on the S bank of the Ohio R, 50 m W of Charleston. Among the prin buildings are the state asylum for incurable lunatics, the co hospital, and a Carnegie library. It has car and railway wagon repairing shops, machine shops, steel rolling mills. Pop 76,000. (3) A township of Suffolk co., New York, on the N side of Long Is. The S part is occupied in market gardening, but along the Sound are the vill. of H., Cold Spring

Harbour, Centreport, and Northport, where many New York business men have residences.

**Huntington, Ellsworth** (b. 1876), Amer. geographer; prof. at Yale Univ. since 1910. He accompanied sev. expeditions to Asia, and undertook research into the drying out of the continent. Works include: *Palestine, and its Transformation* (1911), *The Climatic Factor* (1914), *Civilisation and Climate* (1915), *Red Man's Continent* (1919), *Earth-Sun* (1923), *The Character of Races* (1924), *Quaternary Climates* (1925), *The Human Habitat* (1928), *Weather and Health*, 1930.

**Huntingtower and Ruthvenfield**, united vls. of Perthshire, Scotland, situated in Tibbermore par. The castle which belonged to the earls of Gowrie, was the scene of the 'Raid of Ruthven' in 1582, when James VI., then a boy, was kidnapped. There are bleachfields, which were estab. in 1774; these are fed with water by a Rom. aqueduct from the little R. Almond.

**Huntly**, mkt. tn. of Aberdeenshire, Scotland, situated at the junction of the Bogie and Deveron, 9 m. S.E. of Keith, and 10 m. N.W. of Aberdeen. The ruins of Huntly, or St. Abbogic castle are in the vicinity. It is a prosperous tn., lying in a rich agric. dist., with a trade in farm produce, and manufs. farm implements. Pop. 4200.

**Huntsman Process**, see under IRON AND STEEL.

**Huntsville**, cap. of Madison co., Alabama, U.S.A. Indian corn, cotton, and fruit are cultivated. The Monte Sano health resort is near. Pop. 2000.

**Hunyadi Janos, or John Corvinus Hunyadi** (c. 1387-1456), eminent Hungarian soldier, b. at Hunyad in Transylvania. At an early age he entered the service of King Sigismund and distinguished himself in the Hussite wars. After the death of Albert in 1399, he co-operated in the election of Ladislaus III., who made him voivode of Transylvania and captain of the fortress of Belgrade. In subsequent struggles with the Turks he won victories at Szecudo (1441), at Szentimre, and the Iron Gates of the Danube (1442), but was defeated in 1444 at Varna, where the king met his death. He was made governor of the country during the minority of Ladislaus V., but had continually to contend against the jealousy of Gara and the Callici. In 1453 the king was declared of age, and H. organised a Turkish crusade, during which he won his last victory at Mendor Fehaza in 1456, dying of plague in the camp three weeks after the battle. He was the first great Hungarian general in a modern sense, as he was the first to depend chiefly on strategy and tactics for his victories.

**Hunza** (also Kanjut) and Nagar, two small states on the N.W. frontier of Kashmir. The two states, though peopled by the same Dard race, were always at war, and when the Gilgit agency was estab. they turned their attention to the Brit. agent. This led to the Hunza-Nagar expedition (1891) under Col. A. Duraud, the storming of Fort Nilt, and the subsequent

occupation of the two states by Brit. troops.

**Huoli, or Hualu**, tn. of China, in the prov. of Chili, in 38° N. and 114° 26' E. It is at the foot of the pass which leads from Chili to Shansi, with which a trade in coal, iron, and pottery is carried on.

**Huon Gulf**, extensive inlet, in the E. of Ger. New Guinea, situated between lat. 6° 45' and 7° 30' S.; it possesses sev. fine harbours. In the Second World War, the Jap., having invaded New Guinea early in 1942, held most of the H. G. area by mid-March of that year. Salamana was taken later in 1942 and became Japan's chief centre in the H. G. area. Landings were also effected at Lae, further N. In subsequent fighting in the Salamana-Lae area the Jap. lost at least 12,000 men and by 1944 their garrisons had been reduced to impotence. See further under PACIFIC CAMPAIGNS IN SECOND WORLD WAR, and NAVAL OPERATIONS IN SECOND WORLD WAR; also under NEW GUINEA.

**Huon of Bordeaux**, central figure or hero of a thirteenth-century Fr. *chanson de geste* called after his name. The poem is a mixture of the older historical epic and the later romances, and contains historical and purely legendary matter, the latter being marked by the character of the fairy Oberon or Auberon. It was printed in a prose version in 1516, and was trans. into Eng. by Lord Berners, 1540. See Guisard and Grandmaison, *Anciens Poètes de la France*, 1860; S. Lee ed. of Berners' trans., 1883; and Gaston Paris' ed., 1898.

**Hupa, or Hoopa**, name of an Indian tribe who inhabit the Hoopa valley, California, and who formerly lived in vils. by the Lower Trinity R.

**Hupé**, prov. of Central China, bounded on the N. by Honan, S. by Hunan, E. by Szechuan, and W. by Shensi and Szechwan. The main portion of the prov. is a plain through which flows the Han R. Agriculture is the chief industry, cotton, wheat, rape-seed, tobacco, and beans being grown; vegetable tallow also forms one of the prin. exports. A small quantity of gold is found in the Han R. and some coal is worked. Other minerals found are iron, salt, lime, sulphure, and sulphur. Trade in opium is largely carried on, the big riv. ports being the centre of this traffic. The plant is cultivated in the W. part of the prov. Cap. Wuchang. Chief port, Hankow. The whole of the E. half of the prov. was in effective Jap. occupation from 1941 to 1945. The area is 71,900 sq. m., and the pop. 21,000,000.

**Hurd, Richard** (1720-1808), Eng. divine and writer, b. at Congreve, Staffordshire. He was ordained in 1742, and in 1750 was appointed preacher at Whitehall through the influence of his friend Wm. Warburton. In 1765 he was made preacher at Lincoln's Inn, and two years later archdeacon of Gloucester. In 1774 he was appointed to the see of Lichfield and Coventry and became tutor to the Prince of Wales and duke of York, being made bishop of Worcester in 1781. His residence, Hartlebury Castle, contained a magnificent library. His works include: *Moral and Political Dialogues* (1769)

*Letters on Chivalry and Romance* (1762), *Uses of Foreign Travel* (1763) *Collected Works* (8 vols., 1811) See 1 Kilvert *Memoirs of the Life and Writings of Bishop Hurd*, 1860.

Hurdy, see HURDOI

Hurdwar, see HARDWAR

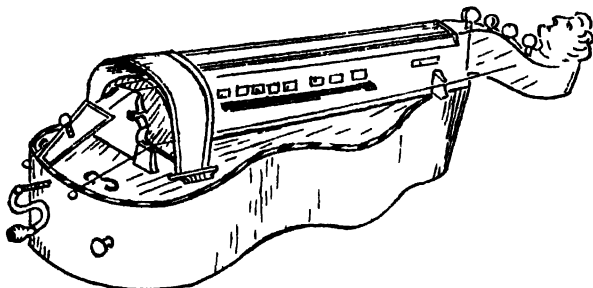
**Hurdy-gurdy**, musical instrument akin to the organistrum, of which indeed it was a later development. In appearance it was something between a lute and a guitar. There were four or six strings in all, but only the first, called the *chanterelle*, was reached by the movable frets or keys, so that it was possible to play a diatonic melody. The other strings were tuned as drones and were made to vibrate by the friction of a leather covered and well rosined wooden wheel turned by a handle with the right hand. This quaint instrument was invented by the O.E.

resembled the H.G. in shape but had pipes like an organ and a device that allowed the wheel to act as both bow and bellows.

**Hurford**, tn of Ayrshire, Scotland, situated on the River 2 m S of Kilmarlock. The manuf. of fireclay is carried on and there are coal mines and iron works. Pop 5000.

**Hurlingham Park**, fashionable resort at Fulham London. The organisation of polo in England dates from its adoption by the Hurlingham Club in 1873 and the game is still played there. In 1867 the Hurlingham Pigeon shooting Club was formed and the sport was carried on until its suppression in 1906.

**Huron** city of S Dakota, U.S.A., co seat of Deuel co. It stands on the r.b. of the James R. 103 m E of Pierre. It has a large shipping business. Huron College is situated here. Pop 10 900.



HURDY GURDY

school (thirteenth century) when it was developing polyphony over a pedal base. It was known in France as the *vielle à roue*. Tuned to the chords of C or G major, the H.G. could support the singing voice or make music by itself. In course of time the H.G. acquired a reputation for rusticity. Other countries called it the German lyre, though the Germans did not rate it highly and its only place in society was at the French court, where it still flourished in the eighteenth century. Methods existed for its study and sonatas for one or two H.G.s were composed by Lully and other composers, while the popularity of mock rusticity at the court of Versailles in the time of Marie Antoinette gave rise to the *fiat champêtre* orchestra which included the H.G., bagpipes, flutes, recorders and oboes. Lavishly ornamented and jewelled instruments were made some of which are to be seen today in museums. The *vielle à roue* continued to appear intermittently during the nineteenth century, thus it was employed in Donizetti's opera *Linda di Chamounix* (1842) to give local colour for two arias. In 1949 Mr John Christie, founder of Glyndebourne Opera, played on the H.G. a divertimento by Haydn, adapted from one of several concertos which the composer wrote for the King of Naples in 1786. This monarch performed on the *lyra organizzata*, which

**Huron, Lake**, in point of size (23 200 sq m) the second of the five Great Lakes between Canada and the U.S.A. in N America. It is bounded by Ontario except on the W. and S.W. where it adjoins Michigan. Grand Manitoulin is one of three thousand and the peninsula of Manitoulin divide the lake into two unequal sections, the N. consisting of N. Channel and Georgian Bay. At the N.E. end a R. carries down water from Lake Superior which is 20 ft higher, whilst at the S. the St. Clair R. discharges into Lake Erie which is 14 ft lower, on the N.W. the Straits of Mackinac makes a connection with Lake Michigan. Lake Huron is 320 m long, 581 ft above the sea, and reaches a depth of 802 ft. It is subject to violent storms, and is rich in salmon trout etc. The lake was discovered in 1615 by Champlain and Father LeClerc who reached it from the Ottawa R. Champlain named it *La Mer Douce*, i.e. fresh water sea. It was subsequently called *Lac d'Orléans* but eventually, on account of the establishment of the Huron missions, received the name *Lac des Hurons* or Huron Lake. For long the N. channel of the lake continued to be a highway for the fur trade (see HURON'S BAY COMPANY). For many years the lake has been a centre of lumbering operations. See E. P. Morton, *Lake Huron and the Country of the Algon-*

quins, 1913, P. C. Day, *Transportation on the Great Lakes* (U.S. War Dept.), 1936, H. Hatcher, *The Great Lakes*, 1944.

Huronian, name of a class of rocks which belong to the pre-Cambrian group. They consist of more or less metamorphosed sedimentary rocks, and, in Canada especially, valuable deposits of most of the important metals are found therein. Generally speaking, the H. rocks comprise quartzite, slate, limestone, and other igneous rocks. They are well developed in certain regions of Michigan, Wisconsin and Minnesota—the last named having valuable iron ores.

Hurons (fr. *huré*, bristled, used as a word of contempt in the sense of stout.) Applied by the Fr. in Canada to the Indian tribes occupying a part of the country in Ontario which was called Huronia. Huronia lay S. of Georgian Bay, it comprised a stretch of country about 40 m. long bounded on the W. by Nottawa-aga Bay and on the E. by Lake Simcoe. The tribes were of Iroquoian descent, and formed a confederacy called Wendat (Islanders), corrupted by the Eng. into Wendot (*q.v.*). The name is still found in the Hurons of Lorette in Quebec, and in the Great Lake Huron. Cartier in his voyage to Canada, 1534, is supposed to have met Huron Indians on the banks of the St. Lawrence but if so, they must have been driven out of the river valley when Champlain came upon them early in the seventeenth century. They seem to have numbered between 20,000 and 30,000. Champlain made friends with them by mutual trading and played them off as allies against the common foe, the Iroquois. It was near what is now the vil. of Hawkeston on the W. shore of Lake Simcoe that Champlain joined a band of Huron warriors and set out to fight the Iroquois during the time when he discovered Lake Ontario (*see also under HURONS BAY COMPANY*). The H. Jesuits established their first mission in Huronia in 1626 and their ministrations served to check the bellicose zeal of the H. When however the Iroquois with the aid of arms bought from the Dutch in New York destroyed the vil. of Huronia (1619) the H. fled some to neighbouring neutral tribes, others to Quebec, where to day their descendants are to be found in Lorette. The H. represented a high state of Indian civilisation and were good agriculturists as well as fishermen but like other Indian tribes, they imposed the drudgery of life on their women folk. Gov. was vested in the tribal chief and there was a well developed system of law. *See E. I. Hathaway, The Story of the Hurons* (Toronto), 1915.

Hurricane, wind storm. The word was borrowed in the fifteenth century by the Portuguese navigators from the Caribbeans, who described such a phenomenon by the word *huracan*. H. has the technical meaning of wind speed more than 72 m.p.h. (Beaufort force 12), but is popularly used of any violent tempest, though, of course, it primarily referred to the sudden storms to which the W. Indies are subject. Thus tornadoes, cyclones, and

typhoons are all species of H. The tropical Hs are whirling storms, the diameter of their circular motion being often as great as 300 m. They usually travel in a westerly direction from the equatorial belt of calms where they form, then mostly curve away from the equator and eventually move in an easterly direction to temperate latitudes. At first, Hs usually travel at about 15 m.p.h., but when beginning to move to the E. they often attract cold air and change into the larger frontal depressions, common to temperate and polar latitudes, which move much faster. The winds blow spirally inward with a tremendous velocity, often reaching 72 m.p.h. and even over 100 m.p.h. As in all low pressure systems the direction of these inward blowing air currents is counter-clockwise in the N. and in the opposite direction in the S. hemisphere. The centre of the swirl is also the centre of lowest pressure and is called the eye of the storm. As the eye is reached the winds drop suddenly, the torrential rain stops, the clouds often break leaving blue sky and only high clouds, and the sea waves become confused and pyramidal. Fortunately perhaps, they form mostly on the sea where they are a great source of danger to ships, but if they pass over an inhabited area they scatter the most violent destruction in their path, and even if they do not strike an area, they often cause great damage by heaving up huge waves against the continental shores.

Typhoon is the specific name for similar wind storms in Orientals seas. *See CYCLONE and TYPHOON*.

Hurricane, single seat low wing cantilever monoplane. It was designed by Sydney Cummins an employee of the H. G. Hawker Engineering Company which in 1935 changed its name to Hawker Aircraft Ltd. and later to the Hawker Siddeley Aircraft Co. Ltd. It is a very early design while it was still on the drawing board the H. was known to the Hawker Co. as the Hurv monoplane and was designed for the 100 h.p. Rolls Royce 'Cobra' steam cooled motor but in 1934 this motor was dropped for the Rolls Royce 'Merlin', a 12 cylinder liquid cooled engine giving 1,000 h.p. at 1,000 ft. This was the engine used in the H. Mark I. The first H., flown by George Bullman on Nov. 6, 1931, was the first fighter that had a retractable undercarriage and an enclosed cockpit, or conservatory. From that time the H. was altered very little in essential the only important alteration being the instead of having a fabric covering, the wings were all metal with a stress skin. The standard fly weight of the H. was then 6,600 lb. but for special purposes it could fly at more than 7,000 lb. In its original design the H. was to be armed with 4 machine guns all inside the fuselage and all firing through the airscrew disk by means of interrupter gear, but subsequently it was fitted with 8 guns in a row outside the airscrew, where they could fire at their own limit of speed without reference to the engine. The H. was put into production early in 1936 and the first machine off the production line was

flown in Oct. 1937. Later, the 8 Brown-ing guns were fitted, 4 in each wing and on each side of the fuselage, firing outside the disk swept by the airscrew. After its early trials, the tail-wheel was made non-retractable and, with a two-blade, fixed-pitch wooden airscrew, the top speed was 330 m.p.h. at 17,000 ft. With metal wings and Rotol constant-speed airscrew, the top speed was 335 m.p.h. at 17,500 ft. This was the stage of development made known just before the outbreak of the Second World War; but even then, by improvements and refinements, the actual speed of the H. was far beyond these figures. The H., together with the Spit-fire (q.v.) was used against the Gers, at the Battle of Britain (q.v.) with annihilating effect.

**Hurst Castle**, par. and castle of Hamp-shire, England, situated about 1 m. S.W. of Lymington. The castle was erected by Henry VIII. for the purpose of defending the Solent. Charles I. was imprisoned here (1648). It is a fortress and look out station. At the rear of the point of fortifications are two lighthouses with occulting and fixed lights.

**Hurst, Fannie** (Mrs. J. S. Danielson), Amer. writer, b. at St. Louis, Missouri, 1889. Educated at Washington and Columbia Univs. She became one of the highest-paid magazine writers in the U.S.A. She has also written novels, somewhat marred by an affected style. President, Authors Guild of America, 1936-37, Vice-President, Authors League of America, 1944-45, Chairman, Women's National Housing Committee, 1936-1937; Member of National Advisory Committee to the Work Projects Administration, 1940-41. Among her best books are *Gaslight Sonatas* (1914), *Humoresque* (1919), *Stardust* (1921), *Luminox* (1923), *Fire and Ice* (1929), *Invitation to Life* (1933), *Admiral's Dance* (1934), *Heard Laughter* (1936), *Lonely Parade* (1942), *Hallelujah* (1944), *The Hands of Veronica* (1945), *We are Ten* (short stories, 1937).

**Hurstonceaux** (Herstmonceaux), vil. of Sussex, in the Eastbourne par. div. 9 m. from Eastbourne. The name is derived from Waleran de Monceaux, who was lord of the manor in the eleventh century. There is an interesting and exceptionally well-preserved castle in the vil. H. castle was built by Sir Roger de Fienes, treasurer to the Household of Henry VI. It was he who obtained a licence in 1441 to enclose, remodel, and furnish with towers and battlements his manor of H. There are no brick buildings S. of the Thames earlier in date than this castle, which is probably not only the best of the early brick buildings of England but the most beautiful of English baronial buildings. The mouldings and dressed work are mostly executed in green sand stone which permits of sharpness of detail. After 1740 the castle fell into neglect and in 1777 the interior, including the buildings in the court within the main rectangular structure, were demolished and the materials used to build the mansion now known as H. Place. Little survived

of the old fabric beyond the outer walls, with their towers, and portions of the inner walls. In 1911 the castle was purchased by Col. Claude Lowther, who began the work of restoration. After his death it was acquired in 1932 by Sir Paul Latham, who completed the restoration (a description of the situation of the castle will be found in Francis Grose's *Antiquities of England and Wales*, written in the eighteenth century; see also article by Sir Harold Spencer Jones, *Astronomer Royal*, in *Nature*, July 20, 1946). Extensive search has been made for a new site for an observatory; purity of atmosphere being an essential, the removal of the observatory from Greenwich had to be faced. H. castle was selected by the Admiralty and along with the castle some 370 ac. of ground were acquired for the erection of the instrumental equipment and also as a safeguard against encroachment too near the observatory of other buildings.

**Hurstpierpoint**, par. and tn. of Sussex, England, 8 m. N. of Brighton, and 2 m. from Hassocks (its station on the S. Region railway). Holy Trinity Church is a fine modern building. Here is St John's College, a public school for boys. Pop. 3000.

**Hurtado de Mendoza, Diego** (1503-75), Sp. diplomatist, poet, and historian, b. at Granada, and educated at the univ. of Salamanca, also attended lectures at Bologna, Padua, and Rome whilst serving under Charles V. He was sent as ambassador to England in 1538, to Venice in the following year, acted for some time as military governor of Siena, and represented the diplomatic interest of Spain at the Council of Trent. From 1547 to 1554 he was special plenipotentiary at Rome; being obliged in 1558 to leave the Court on account of a quarrel with Philip II., he settled at Granada and devoted himself to the study of Arabic poetry and to the production of his best work, the *Guerra de Granada* a list of the revolt of the Moors of Alpujarras under Philip II. This hist., although written in 1572, was not pub. until 1627. His talents as a poet were of no mean order, and he popularised the classical H. hendecasyllables. He is generally allowed to be the author of that great picturesque novel *La virilude lornes*. See A. Santa y Alonso *Diego Hurtado de Mendoza apuntes biograficos criticos*, 1880; and monograph by A. G. Palencia and E. Mole, 1912-13.

**Husband and Wife**. The consideration of the essentials to a validly celebrated marriage, and the various recognised forms, past and present, of the ceremony or contract of marriage itself, are not dealt with in this article, and will be found dealt with under MARRIAGE, and the subject of the dissolution of marriage will be found under ALIMONY, DIVORCE, JUDICIAL SEPARATION, and MARRIAGE. This article is restricted to the rights and obligations arising from the relationship of husband and wife. The older theory of Rom. law contemplated the wife as a mere chattel of the husband, and gave her no superior rights to those of her own daughters. The later Rom. law went to



the opposite extreme, allowed the relationship of husband and wife to be contracted and dissolved by the slenderest forms, and left the parties all but independent of each other. This evolution has found its parallel in the social systems of many modern states, both as regards the personal freedom of the wife and the immunity of her separate property from the dominion of her husband.

Theoretically each spouse has a legal right to the society and presence (*consortium*) of the other, but in Eng. law neither the petition for restitution of conjugal rights nor any other proceeding will avail to enforce that right. A husband has no legal right to restrain his wife from leaving him, and will even be ordered by the court to abstain from molesting her if she choose to stay away. Indeed, any physical compulsion put upon a wife is illegal, and in many cases would amount to cruelty so as to found a claim for judicial separation (*q. v.*). On the other hand, if a wife choose to leave her husband without adequate cause, he is entitled to refuse to admit her into his home again, and the converse probably also applies. The suit for restitution of conjugal rights is more than a formal condition precedent to the subsequent formulation of a charge of desertion. The practical value of *consortium* lies in the right of the husband to bring an action of damages against a third party who has enticed away his wife, though the archaisms of the law still survive in the denial to a wife of a corresponding action. The action of *crim. con.* (criminal conversation), as it was called, for damages in trespass against a man who has committed adultery with the plaintiff's wife was abolished on the establishment of the Divorce Court in 1857, and probably damages can only be obtained against an adulterer by citing him as co-defendant in a divorce petition, for it seems to be the better opinion that even the above noticed action for enticing away is competent only to the case of one who is deprived of the services of his employees (see further on this, *Jenks, Husband and Wife in the Law, 1909* and *Pollock, On Torts*). But each spouse may sue for damages for the loss of the 'comfort and society' of the other spouse where the latter has been physically injured by the negligence or intentional wrongdoing of a third party. By a legal anomaly, however, the claim for damages when death results is restricted to the actual pecuniary loss sustained.

By the old common law the father as the legal guardian by nature and nurture has the complete control over the person, the education, and religious upbringing of his children during his lifetime, but covenants in separation deeds not to insist on the custody of children will bar the right, as will an order of the Divorce Court with respect to the custody of children. But either parent convicted of cruelty to a child under sixteen may be deprived of the custody of it.

*Rights of husband and wife in one another's property, and obligations arising from marriage.*—The ancient maxim of the

common law, and one eminently in accordance with feudal principles, was that H. and W. were one in the eye of the law. But this unity on its proprietary side was entirely for the benefit of the husband. The wife's freeholds became vested in the husband and herself jointly during coverture (*q. v.*) but the husband had the sole management and took the rents and profits, while if the wife predeceased him, he had a life estate in the wife's freeholds called a tenancy by courtesy (see under *COURTESY*). Further the wife's personal property, comprising leaseholds, and choses in action when reduced into possession (see under *CHOSES IN ACTION*), passed to the husband on marriage or became his if it was subsequently acquired by the wife. In equity (*q. v.*) and then statutorily encroached upon and finally whittled away practically all these marital rights. Equity modified the common law by the doctrine of the 'separate use,' by which any property expressly given to the wife before or after marriage for her separate use was held from the husband's control subject to the husband's claim to any part of it unless disposed of by her death and by the restraint or anticipation which, when attached to a gift of property to her effectually kept that property free from her husband's persuasive influence, so far as prospective income was due, by the simple fact that she herself could not anticipate it. The Married Women's Property Act, 1882, effected a radical change in the wife's proprietary position, though the old law, as modified by equity and statute law prior to 1882 still applies to women married before Jan. 1, 1883. The Act of 1882 made a married woman able to enter into contracts as a *feme sole* (i. e. an unmarried woman), and under that Act her contracts bound her separate estate so far as not restrained from anticipation and, generally speaking, the Act put a married woman in the same position as an unmarried woman with respect to all her property. But the husband still had the right to her property by survivorship if she died intestate (see further under *SUCCESSION, INTESTATE*). Further, the Act applied to all women married before Jan. 1, 1883, 'regards all property acquired by them since that date.' An Act passed in 1893 makes notable changes in the law relating to the capacity of property, and habilitates married women in all respects as if she were a single woman, so that she is now able to hold and to dispose of any kind of property, render herself, and be rendered, liable in respect of any contract, debt, or tort (see *TORT*), sue and be sued in contract or tort, and be subject to the law of bankruptcy and to the enforcement of judgments and orders, in all respects as if she were a single woman. All property which immediately before the passing of the Act was the separate property of a married woman or held for her separate use in equity, or belonged to her at the date of her marriage or, after the Act, has been acquired by her or devolves upon her, belongs to her in all respects as if she were a single woman and

may be disposed of by her accordingly. The Act also abolished the restraint on anticipation (*see supra*) as to instruments effected after Jan. 1, 1936. Notwithstanding the existence of a clause restraining the wife from anticipation, the court may, under the Conveyancing Act, 1881, bind her interest for her benefit and with her consent, and in any case the clause will not save her property from liability for her ante-nuptial debts, except to the extent of any part of her property that had not actually reached her hands when the debt was incurred. With this enfranchisement of the wife's property there have been corresponding augmentations of such rights as she had in the property of her husband. At common law a widow was entitled to a dower or a life income of one-third of her husband's freeholds of inheritance, whether he had disposed of them prior to his death or not; but as this right was illusory by reason of the conveyancing device known as 'uses to bar dower,' equity gave her a right to dower out of her husband's equitable estates of freehold so far as not disposed of by him. The wife is still legally entitled to dower, but in practice settlements usually contain declarations against dower (Jointure (*q.v.*) also bars dower.) But, on the other hand, a wife now has stronger claims on her husband's personality, assuming he dies intestate (*see DISTRIBUTIONS, STATUTES OF*). There is nothing to prevent the husband, any more than the wife, from willing away the whole of his personality from his wife.

Husbands generally make their wives a periodical allowance for house-keeping. Strictly the wife can be called upon to account for every penny of this. If she saves any of it, the balance belongs to her husband, and if she invests such savings or puts them into her banking account the husband can get an order of the court summarily transferring such investment or savings into his own account, though if the wife disputes his title, he must prove that he had no intention of giving her any surplus. Each spouse can sue the other and bring criminal proceedings against the other for the protection of his or her separate property. But a married woman may not proceed criminally against her husband while they are living together, nor after they are separated, as to wrongs to her property committed before separation, except in respect of property wrongfully taken by the husband on leaving or deserting her.

It is a dogma of Eng. law that the husband has the right to choose the house, and if the house is in his name, it follows, not from the matrimonial relationship, but as an ordinary result of the law of contract, that the husband has the right to allocate the rooms for various purposes, and, generally speaking, regulate the domestic arrangements. If, of course, the wife leased or bought the house, or if it stands in her name, she can legally exclude the husband from entering it.

Each spouse is assumed to have undertaken the maintenance of the other and of the children of the marriage (including

such illegitimate or other children as the wife may have had in marriage). But apart from payments ordered by a magistrate to be made for the support of a deserted wife on a separation order, the only means of enforcing the undertaking to maintain is through the Poor Law Authority, if and when the children or wife become chargeable to par. relief. But the wife may pledge her husband's credit for necessities for herself and the children, even where she has separate property of her own. The wife's liability for maintenance apparently only arises on the entire failure of the husband. But the law is by no means clear as to the exact circumstances when the wife's property can be resorted to for this purpose. Apart from the purchase of necessities, the wife has no right to pledge her husband's credit, and it is unwise for tradesmen to assume that she has, for the reason that the husband can rebut the presumption that he has authorised his wife to pledge his credit, by proving either that he has expressly or impliedly forbidden her to do so, or that he makes her a sufficient allowance. If the husband by paying bills leads a particular tradesman to believe his wife has authority, he must give the tradesman express notice that he gives no further authorisation, if he desires to prevent the wife from further pledging his credit with that tradesman. The mere fact that a tradesman enters purchases in the wife's name and that she invariably pays with her own cheques, and that the tradesman did not know she was a married woman, will not make her separate property liable if, in fact, she did not contract otherwise than as her husband's agent (*Pagani v. Bettwiler*, 1906, A. C. 118).

Before the Act of 1935, the husband was liable for the wife's ante-nuptial debts to the extent of any property he may have acquired through her, but the new Act abolishes his liability for his wife's ante-nuptial debts and obligations. The Act, however, makes no change in the law regarding the husband's liabilities for his wife's necessities. For his wife's ante-nuptial civil wrongs the husband's liability is similarly restricted, but he is liable without limitation jointly with the wife for civil wrongs (torts) committed by her during marriage, provided the parties were cohabiting at the time. But the wife incurs no liability in respect of her husband's debts or civil wrongs. As to the presumption that a married woman's crimes are presumed to have been committed under the coercion of her husband, and as to the criminal liability generally of married women, *see under CRIMINAL LAW*. Neither spouse can give evidence against the other when the latter is charged with a criminal offence; but by the Criminal Evidence Act, 1898, such spouse can give evidence on behalf of the other if requested so to do by the accused spouse. But in all civil proceedings both H. and W. can, generally speaking, be compelled to give evidence for and against each other (*see EVIDENCE*). In the absence of fraud a policy taken out

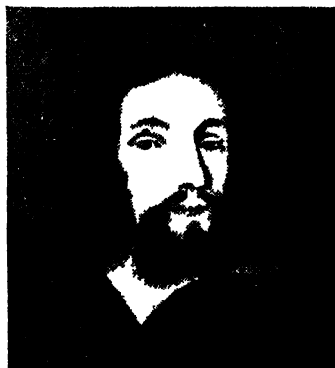
by the husband and expressed to be for the benefit of his wife or children or both can never be touched by his creditors. A husband is liable for his wife's income tax, and apparently if she refuses to pay and he cannot, he can be kept in prison until she does pay. An important change was introduced by the Administration of Estates Act 1925, which affected the rights of a wife in her husband's property. Dower (or the right of a widow to a life estate in certain lands of the husband) was practically abolished. On the death of an intestate husband the wife takes (1) all personal chattels absolutely, i.e. furniture, plate, pictures, household effects, etc.; (2) £1000 free of death duties with interest at 5 per cent from date of death; (3) the income of the whole residue for life if the husband leaves no issue, and of half the residue if he leaves issue. The life interest may be capitalised should this be desired in order that the residue may be freed for immediate distribution to other beneficiaries.

The Scots law of husband and wife is not now markedly dissimilar to the Eng., since the passing of the Married Women's Property (Scotland) Act, 1881. But the Act of 1933 (noted above) does not apply to Scotland (or to N. Ireland). The wife has a separate estate in her movables, and the rents and profits of her heritable property belong to her. Parties married before the Act can come under its operation by mutual deed and in any case come under the Act unless the husband before marriage has by irrevocable deed made reasonable provision for his wife in the event of her surviving him. The wife is not entitled to assign her prospective income from movables or dispose of her movables without her husband's consent. The husband has a right of succession to his wife's movables if she die intestate. The widow is entitled to a life rent of one third of her husband's estate and one half or one third of the movable estate (one half if he were without issue, one third if he left issue). See K. Jenks, *Husband and Wife in the Law*, 1909; Lush, *Law of Husband and Wife*; Pollock, *On Torts*.

Husi, Hushi, or Hush, tn. of Moldavia, Rumania, situated 9 m. W. of the Moldavian S.S.R. border. Wine is largely produced and there is noted yearly fair. The treaty of Pruth between Turkey and Russia was here signed in 1711. Pop. 16,700.

Huskisson, William (1770-1830) British statesman, after a preliminary grounding in affairs as private secretary to Lord Gower, the Brit. ambas. at Paris, and then as secretary to the Admiralty, took his seat in Parliament in 1796. From 1801 he held various minor offices, and in 1827 became colonial secretary and leader of the House of Commons under Godrich, and retained these positions under Wellington, with whom, however, he presently disagreed, and from whose ministry he then retired. He was run over by an engine at the opening of the Manchester and Liverpool Railway on Sept. 15, 1830, and died on the same day. See life by J. Wright, 1831.

Huss (or Hus), John (c. 1373-1415), Bohemian religious reformer, b. at Husinec in Bohemia. Hus was the name which he adopted himself about 1396 as before then he was known as Johann Hussinec, or de Hussynec. He was educated at an elementary school and the Univ. of Prague, where he became B.A. in 1393, Bachelor of Theology in 1394 and M.A. in 1396. In 1400 he was ordained and in 1402 was made rector of the Univ. of Prague. The pro-Wycliffe sentiments of H. gradually made him suspected of heresy and his protest against the burning of Wycliffe's books by the archbishop of Prague in 1410 caused his excommunication. His support of the king in his policy towards the papal schism made him exceedingly popular, and although in 1411 the whole city of Prague was laid under an interdict H. still preached and carried on his duties as usual. In the following year, however, he was obliged to quit Prague and whilst in seclusion he wrote his *De Ecclesia*, his greatest work. In 1414 he was summoned to attend the



JOHN HUSS

council at Constance between King Sigismund and Pope John XXIII., and was granted a "safe conduct" by the former. Nevertheless he was imprisoned soon after his arrival, and, on his appearance before the council in 1415, was ordered to recant all his doctrines which were held to be heretical. On his refusal he was condemned to the stake and met a martyr's death with exemplary fortitude on July 6. H. was a scholar of deep erudition, as is proved by his *Super IV Sententiarum*, but he is chiefly remarkable for the inspiration he gave to the cause of Bohemian nationalism. His works may be divided into four classes: (1) dogmatical and polemical, (2) homiletical, (3) exegetical, (4) epistolary. See also HUSSARS, WARS OF THE. See V. Flajshans (ed.), *Joannes Hus Opera Omnia*, 1904. See also W. Berger, *Joannes Hus und König*

*Sigmund*, 1871. Count F. Lützow, *Life and Times of Master John Huss*, 1809. J. Herbon, *Huss and his Followers*, 1926. E. Denis, *Huss et la guerre des Hussites*, 1930.

**Hussars**, originally the name of the Hungarian cavalry raised by Matthias I in 1458. The word is derived from the Hungarian *husz* meaning twenty, as every twentieth house had to furnish a man for the corps. The term was applied to light cavalry whose duties were mainly scouting, reconnaissance, and roving commissions. Speed being an essential feature in their employment, they had to travel light a factor which also governed the distance they could cover in a given time. The success of this arm in the Hungarian service caused it to be adopted in most European armies and in the British service some Light Dragoon regiments were converted into H. at the beginning of the nineteenth century. The distinctive features of the dress of H. are the bushy ribbed short jacket and pelisse (or hanging jacket) worn over the left shoulder. In the process of time the tactical employment of the various kinds of cavalry has become unified and no distinction is now made. Up to 1922 the H. regiments in the British service were the 3rd 4th 7th 8th 10th 11th 13th 14th 15th, 16th 19th and 20th but in that year, on the reduction of the cavalry establishment, the following pairs of regiments were amalgamated to form one regiment each—13th 18th 14th 20th and 1th 10th. In 1928 the 11th was converted into a cavalry armoured car regiment five years later the 1th 19th were redesignated the 1th King's Royal Hussars. Under the subsequent Army reorganisation most of the remaining Hussar regiments were converted into light tank units or armoured car companies. The roll of battle honours of the H. regiments (or their predecessors the Light Dragoons) commenced with Dettingen (1743) and they have taken a conspicuous part in all campaigns since that date. During the Peninsular Campaign the 1th gained particular distinction in actions at Sahagun and Buena Vista (21 1808) when they routed a far superior body of French cavalry. Waterloo (1815) on their roll, also the victories in the Crimea. The 1th formed part of the Light Brigade at Balaklava. The type of fighting in the South African War, 1899-1902 was peculiarly suited to cavalry action and the H. had their full share of actions. During the early stages of the First World War they were employed as cavalry but with the development of trench warfare they fought in France and Flanders in a dismounted capacity. The 7th and 13th were sent to Mesopotamia where they did effective work as cavalry.

In the Second World War units of the H. which fought on the Western Front from Normandy to the Elbe included 8th King's Royal Irish H., 11th H., 13th 18th Royal H., 15th 19th The King's Royal H., and the 23rd H. With the Eighth Army in Italy were the 3rd The King's Own H., 4th Queen's Own H., and the 10th Royal H.

**Hussein (Husein) ibn 'Ali** (1853 or 1854-1931), sometime king of the Hejaz, b. at Mecca, son of the Amir 'Ali ibn Muhammad, succeeded his uncle the Amir Abdullah as Grand Sherif of Mecca, 1909. He was an opponent of Turkish influence, and sided with the Brit. in the First World War after having espoused the opposite cause for a short period, proclaimed himself king, 1916, and aspired to the position of king of pan Arabia, thereby incurring the hostility of Ibn Sa'ud. He sent a representative to the Peace Conference, 1919. But, as he refused to be bound by the treaties there made he got into difficulties with neighbouring states. In 1921, on the deposition of the Ottoman Caliph by the Turkish Grand National Assembly, H. was offered and accepted the vacant Caliphate but was unable to retain it in the face of internal faction. In the same year he abdicated in favour of his son Ali after being defeated by Ibn Sa'ud (q.v.) and retired to Akaba whence he was removed to Cyprus. There he spent five years of exile only retiring in 1930 to Amman the cap. of his son Abdullah the emir (now king) of Transjordan where he died. See further under ARABIA. H. F. A. See M. BOURCI, *Vom Wüdrsturm I stürm* 1938.

**Hussein, Kamil** (1883-1917) sultan of Egypt who on the death of the khedive, Abbas Hilmi in 1914 was proclaimed sultan and continued at the head of affairs till his death.

**Hussites** War of the name given to the struggle between the Bohemian followers of Huss (q.v.) and King Sigismund which began in 1419. Popular feeling was stirred up by the news of the martyrdom of Huss and in 1411 the nobles of Bohemia and Moravia sent the *prophet of Bohemia* Huss, couched in very strong terms to the council at Constance the contemptuous attitude of Sigismund who declared that he would drown all Hussites and Hussites finally brought on the war. The Hussites were victorious at Ziskaberg, as it afterwards came to be called from Zis (q.v.), the leader and saviour of the war, in 1420. Deutsch Brod in 1422 Aussig in 1424 and Taus in 1431 and invaded Silesia Saxony and Franconia many times with success. After Taus negotiations were begun, and by the compact of Prague the moderate party of the Hussites gained their ends. There were, however, two opposing parties in the Hussite movement, the Trinitarians and the Tabornites. The former, who were also known as Calixtines (Lat. *calix*, chalice) derived their name from the fact that their demand was for the communion in both kinds (*sub utraque specie*). The Tabornites (from Taborn their headquarters) were more advanced in their views and rejected most of the ceremonial of the Roman Church. The latter party refused to accept the compact of Prague, but was totally defeated by the Trinitarians at Jihon in 1344. The Utraquist creed was that of the established Church of Bohemia, until all non-Roman creeds were prohibited in 1620. For a later development of the Tabornites, see BOHEMIAN

**BREITEN.** See I. Krummell, *Ultrakristen und Taboriten*, 1871; E. Denis, *Russ et la guerre des Hussites*, 1878; H. Toman, *Husitské Veleníctví*, 1878; and Countess Lützow, *The Hussite Wars*, etc.

**Husum**, tn. of Schleswig-Holstein, Germany, situated on the Humber Au, about 3 m. from the N. Sea. Pop. 10,000.

**Hutcheson, Francis** (1694-1747), Irish philosopher, b. at Drumalig, co. Down, and educated at Glasgow, where he studied philosophy, classics, literature, and theology. On leaving Glasgow he was ordained and was on the point of accepting a Presbyterian ministry when he was persuaded to start a private academy in Dublin. While employed here, he pub. an *Inquiry into the Original of our Ideas of Beauty and Virtue* (1725), followed by an *Essay on the Passions and Affections* (1728). These writings probably led to his election to the chair of moral philosophy at Glasgow in 1729, where he spent the remainder of his life lecturing on a variety of subjects. His ethical writings constitute his chief claim to fame, and the best account of his teaching is in T. Fowler's *Shaftesbury and Hutcheson*, 1882. His greatest work is *A System of Moral Philosophy* (1755). He adopted Lord Shaftesbury's view in this direction, and exercised a great influence upon the Scottish philosophy of the modern school. See lives by W. Scott, 1900; and C. de W. Thorpe, 1935.

**Hutchinson**, city of Kansas, U.S.A., in Reno co. It is situated on the R. Arkansas, and has salt works, sugar factories, and meat-packing works. It is a distributing centre and has a large export trade in grain, flour, dairy products, etc. The Kansas State Fair is held here. It is served by three railways. The State Industrial Reformatory is situated here. Pop. 27,000.

**Hutchinson, Anne** (c. 1590-1643), Amer. religious enthusiast, daughter of a Lincolnshire clergyman named Marbury. She married in 1631 and emigrated to Boston, Massachusetts, where she lectured, and was a follower and admirer of the Rev. John Cotton. She denounced the Massachusetts clergy, and was tried for heresy and sedition, and banished. She then estab. a settlement on Rhode Is., and set up a democracy (1638). Four years later, after the death of her husband, she settled on Long Is. Sound in what is now New York State, and was killed in an Indian rising. A. H. and her followers were known as Antinomians, a name first used by Luther for the followers of John Agricola (see ANTINOMIANISM). See C. F. Adams, *Antinomianism in the Colony of Massachusetts Bay*, 1894.

**Hutchinson, Arthur Stuart Menteth** (b. 1879), Eng. novelist; son of Lt.-Gen. H. J. Hutchinson. He pub. three novels—*Once Aboard the Luger* (1908), *The Happy Warrior* (1912), and *The Clean Heart* (1914)—before his spectacularly successful best-seller *If Winter Comes* (title a quotation from Shelley, 1921). It is the garrulously story of a chronically-unfortunate person, Mark Sabre, who has the First World War to assist

his misfortunes, and whom H. has brought into some of his later works—which include: *This Freedom* (1922), *The Eighth Wonder* (1923), *One Increasing Purpose* (1925), *The Uncertain Trumpet* (1929), *The Golden Pound* (1930), *The Book of Simon* (1930), *Big Business* (1932), *The Soft Spot* (1933), *As Once You Were* (1938), *He Looked for a City* (1940), *It Happened Like This* (1942).

**Hutchinson, John** (1615-64), Eng. Puritan statesman, b. at Nottingham. Educated at Nottingham and Lincoln free schools and later at Peterhouse, Cambridge. He entered Lincoln's Inn in 1637 to study law, but devoted himself rather to music and divinity. In 1643 he entered the Parliamentary army with the rank of lieutenant-colonel, and was appointed governor of Nottingham castle and tn. In 1646 he was returned to Parliament as member for Nottinghamshire. He was elected member for the first two councils of state of the Commonwealth, but with the expulsion of the Long Parliament in 1653, retired into private life. After the Restoration he was falsely accused of treasonable conspiracy and confined to the Tower and Sandown Castle from 1662 till 1664, dying at the latter place.

**Hutchinson, John** (1674-1737), Eng. theological writer, b. at Spennithorne, Yorkshire. He first served as steward to the duke of Somerset, and other families of position, but ultimately devoted himself to religious studies. In 1724 he pub. *Moses Principia* (Part I.), followed in 1727 by Part II., and by many other works, including: *Moses Sine Principio* (1721), *Power Essential and Mechanical, Glory or Gravity, The Religion of Satan*, etc. According to H., the Bible contained the elements of all rational philosophy as well as of true religion. See life by Spearman in H.'s *Works*, 1748-65.

**Hutchinson, John** (1832-1910), Scottish sculptor, b. in Edinburgh. He became an academician in 1867. His prin. work consists of statues of Robert Bruce, John Knox, Queen Victoria, the Prince Consort, etc.

**Hutchinson, Sir Jonathan** (1828-1913), Eng. surgeon, b. at Selby, Yorkshire, where he was educated, and afterwards entered St. Bartholomew's Hospital. In 1881 he was elected a member of the Royal Commission on Smallpox Hospitals, and in 1890-96 was on the Vaccination Committee. In 1889 he was president of the Royal College of Surgeons. Amongst his pub. are: *Rare Diseases of the Skin* (1860), *A Clinical Memoir on Certain Diseases of the Eye and Ear consequent on inherited Syphilis* (1863), *Illustrations of Clinical Surgery* (1878), *The Pedigree of Disease* (1881), *A Smaller Atlas of Illustrations of Clinical Surgery* (1895), and *Fishing and Leprosy* (1906).

**Hutier, Oskar von** (1857-1933), Ger. soldier who came to the fore during the First World War as an army commander. He was of Fr. extraction; his grandfather is said to have served in the Fr. army. He distinguished himself in Aug. 1917, when he defeated the Russians in the Riga area. He was transferred to the W. Front, and

appointed to the command of the Eighteenth Army. For the Ger. offensive in March 1918 his army was specially organised and augmented in order to break through the Flesquères salient. During the Allies' counter-offensive in Aug. 1918 his army suffered severely at the hands of the Brit. and Fr. in the Avre-Oise sector. After the war he became president of the Ger. Officers' Society.

Hutt, Lower, and Upper, see LOWER HUTT; UPPER HUTT.

Hutton, Philip von (c. 1515-46), Ger. adventurer, b. at Birkenfeld, and a relative of Ulrich von H. He joined a band of 600 adventurers from all parts of Europe in 1533, who went out to conquer the prov. of Venezuela granted to the Welsers of Augsburg by Charles V. In 1541 he set out at the head of an expedition to seek the mythical El Dorado, and after wandering about for some years returned to Venezuela to find the vicereignty usurped by Juan de Carvajal, who seized H. and treacherously put him to death. See *Zeitung aus India* Junkher Philipps von Huten, 1785.

Hutton, Ulrich von (1488-1523), Ger. poet and author, b. at the castle of Steckelberg, near Fulda, Hesse. He was the eldest son of a noble but undistinguished family and was destined by his father for the cloister, being of feeble health. He was sent to the monastery of Fulda, but greatly disliked the life there, and in 1505 fled, going first to Cologne and afterwards to Erfurt and Frankfurt-on-Oder, where he took his master's degree and pub. his first poem. He went from there to Wittenberg and Leipzig, and then passed into Italy, where he was plundered in the war between Charles V. of Spain and Francis I. of France at the siege of Pavia, and later took service in the emperor's army. Later he returned to Germany and had bestowed upon him by the Emperor Maximilian the laureate crown. While in Italy H. became imbued with a hatred of the papacy, and on his return to his native land he estab. a small printing press of his own, and issued pamphlets in Ger. violently denouncing the Rom. clergy. He in turn was denounced at Rome by the Archbishop Albert, and availed himself of the protection of Franz von Sickingen, the champion of the knightly order. He was, however, soon forced to flee from the latter's castle and went to Basel, where he quarrelled with Erasmus, who did not approve of his extreme measures. From this time onwards till his death at Zürich, he lived a wandering life. His chief works were: *Ars versificandi*; *Nemo*; *Vadimus*; *Epistolæ* and many admirable poems in Lat. and Ger. His works were ed. by F. Bocking, 1859-70. See lives by D. F. Strauss, 1858 (trans. 1874); O. Flake, 1929; and H. Holborn, 1929; also P. Kalkoff, *Hutton und die deutsche Reformation*, 1920. P. Held, *Ulrich von Huten, seine geistige Auseinandersetzung mit Katholizismus, Humanismus und Reformation*, 1928.

Hutton, James (1726-97), Scottish geologist, b. at Edinburgh and educated

at the univ. there. He took up successively law, medicine, and agriculture. From 1768 he devoted his life to literary and scientific research. In 1783 he pub. his *Theory of the Earth*, followed in 1792 by *Dissertations on Different Subjects in Natural Philosophy and An Investigation of the Principle of Knowledge and of the Progress of Reason from Sense to Science and Philosophy* (1794). For biography of H., see J. Playfair, vol. v. of *Transactions of the Royal Society of Edinburgh*.

Hutton, Leonard (b. 1917), Eng. cricketer: Yorkshire professional, first playing in co. cricket in 1931. In Aug., 1938, he scored 364 runs in a Test match against Australia at the Oval, beating Don Bradman's Test record of 334 made in 1930.

Hutton, Richard Holt (1826-97), Eng. journalist and critic, b. at Leeds. His best work is shown in *Essays, Theological and Literary* (1871), and he also wrote lives of Sir Walter Scott and Cardinal Newman. See J. Hogben, *Richard Holt Hutton of the Spectator*, 1899.

Huxley, Aldous, Eng. author, b. in 1894; brother of Julian Sorrell Huxley (q.v.), educated at Eton and Balliol, Oxford. In 1919 he was on the staff of the *Athenæum*, and, later, dramatic critic for the *Westminster Gazette*. His early poetry allied him with the Imagist school, but, beyond *Leda*, a poem which combines gorgeous description with a frank but unexceptional interpretation of the classical myth, his poetry is mostly to be described as scientifically satirical, a method which he continued with success in his novels. The short story is perhaps his most successful medium; but he first attracted wide attention with his novel, *Antic Hay* (1923), and enhanced his reputation with *Point/Counter Point* (1928). This latter book was dramatised by another author, but the dramatic method is directly opposed to H.'s method, which is deliberately to flatten all emotion and incident to the same level, the resulting impression being that nothing is worth while in a world altogether negative. His negative philosophy limits him to a range of characters who best exemplify it, and, for this reason, his interest is brief, but always sustained by brilliance of observation, wit, and satire. He has the mocking humour of a Hogarth. Each new novel is a fresh exploitation of his box of puppets; he talks to them and makes them talk to him with the most brilliant ventriloquial virtuosity in modern fiction. His earlier work was in the style of Thomas Love Peacock; but later he changed to the manner of H. G. Wells, whose use of the novel as a forum of social ideas has done so much to transform the novel of this century. This may be illustrated by his *Brave New World* (1932), a brilliant satire on Utopia realised, after development according to plan by modern science, philosophy, and morality. The vision of society here depicted may be awful, yet it is assumed to be the logical result of the apotheosis of latter-day ideals cultivated by machine-made humans. He has also written essays on philosophical and social subjects.

His other works are: *Limbo* (1920), *Leda* (1920), *Crome Yellow* (1921), *Mortal Coils* (1922), *Little Mexican* (1924), *Those Barren Leaves* (1925), *Along the Road* (1925), *Two or Three Graces* (1926), *Jesting Pilate* (1926), *Proper Studies* (1928), *Do What You Will* (1929), *Brief Candles* (1930), *Music at Night* (1931), *Brave New World* (1932), *Beyond the Mezique Bay* (1934), *Eyeless in Gaza* (1936), *The Olive Tree and other Essays* (1936), *Ends and Means* (1937), *After Many a Summer* (1939), James Tait Black Memorial Prize for 1940, *Grey Eminence* (1941), *The Art of Seeing* (1942), *Time Must have a Stop* (1944), *Perennial Philosophy* (1946), *Science, Liberty and Peace* (1947), *The Joyous Smile* (play, 1948), *Apes and Essence* (1949); (ed.) *The Letters of D. H. Lawrence* (1932). See A. Honderston, *Aldous Huxley*, 1935.

Huxley, Julian Sorell, Eng. biologist; b. 1887; eldest son of Leonard H. (the oldest son of Thomas Henry H.). Educated at Eton (King's Scholar), Balliol College, Oxford (Brakenbury Scholar); Newdigate prizeman, 1908; first in natural science (zoology) 1909; Naples Scholar, 1909-10. Lecturer in zoology, Balliol College, 1911-12. Research associate of Rice Institute, 1912-13. Assistant prof., Rice Institute, Houston, Texas, 1913-16. Staff-lieutenant, G.H.Q., Italy, 1918. Fellow, New College, and senior demonstrator in zoology, Oxford, 1919. In Oxford Univ. expedition to Spitzbergen, 1921. Prof. of zoology, King's College, London, 1925-27—since then honorary lecturer. Fullerian prof. of Physiology, Royal Institute, 1926-29. Biology editor, *Ency. Brit.*, 14th ed. Visited E. Africa to advise on native education, 1929. Secretary, Zoological Soc. of London, 1935-42; Romanes Lecturer, 1943; Member of Commission on Higher Education in W. Africa, 1944; Director of UNESCO 1946-48; Elected F.R.S. in 1938. H. is endowed with wonderful powers of lucid exposition. His writings have popularised the most abstruse secrets of biology in the same way as those of Jeans and Eddington did in the realms of astronomy and modern physics. Pub.: *Hollywood* (Newdigate poem, 1908), *The Individual in the Animal Kingdom* (1912), *Essays of a Biologist* (1923), *The Stream of Life* (1926), *Essays in Popular Science* (1926), *Religion without Revelation* (1927), *Bird-Watching and Bird Behaviour* (1930), *Science, Religion, and Human Nature* (1930), *Africa View* (1931). Has ed. textbooks of animal biology: *An Introduction to Science* (with E. N. Da C. Andrade) vols. 1-4 (Simple Science) (1931-35), *Problems of Relative Growth* (1932), *The Elements of Experimental Embryology* (with G. R. de Beer, 1931), *Scientific Research and Social Needs* (1931), *If I were Dictator* (1931), *We Europeans* (with A. C. Haddon, 1935), *At the Zoo* (1936), *The Living Thoughts of Darwin* (1939), *The Uniqueness of Man* (1941), *Democracy Marches* (1941), *Evolution, the Modern Synthesis* (1942), *Evolutionary Ethics* (1943), *On Living in a Revolution*

(1944), *Evolution and Ethics, 1893-1943* (part author, 1945) (with D. Clevedon), *Julian Huxley on T. H. Huxley* (1945), *Religion as an Objective Problem* (1946), *Man in the Modern World* (1947).

Huxley, Thomas Henry (1825-95), Eng. scientist, b. at Ealing. He matriculated at London Univ. in 1842, and afterwards obtained a scholarship at the Charing Cross Hospital. Here he accomplished a great deal of work, and in 1845 announced his discovery of that layer of cells in the roof-sheath of hair which now bears his name. The same year he graduated M.B. in London Univ., and from 1846 to 1850 was assistant-surgeon on H.M.S. *Rattlesnake*. During the voyage he devoted himself to the study of animals, and estab. a morphological plan, dividing Hydrozoa into Radiata and Nematophora. In 1851 he was made F.R.S., became lecturer on natural hist. at the Royal School of Mines in 1854, and naturalist to the geological survey the following year. In 1855-59 he pub. works chiefly dealing with fossil forms, the most important of which are his memoirs on Cephalopods and Pteraspis (1858), the accounts of the Eurypterina (1856-59), and the description of Diconodon, Rhynchonellid, and other reptiles. One of his most brilliant successes was his *Theory of the Vertebrate Skull* (1858), which was read before the Royal Society. In 1863 he pub. *Zoological Evidence as to Man's Place in Nature*, as well as *On the Causes of the Phenomena of Organic Nature*, both of which were widely read and discussed. In 1866 appeared his *Elementary Lessons in Physiology*, his *Manual of the Comparative Anatomy of Vertebrate Animals* (1871), and *Elementary Biology* (with Martin, 1875). In 1880 there appeared his well-known monograph *The Crayfish*, which led to the introduction of this animal into elementary courses on zoology. But H.'s pubs. do not represent all his work; he also filled many important posts. He was an active member of four royal commissions, including that of the Fisheries of the United Kingdom (1861-65), Hunterian prof. at the Royal College of Surgeons (1863-69), Fullerian prof. at the Royal Institution (1863-67), president of the Royal Society (1883-85), inspector of fisheries (1881-85), and rector of Aberdeen Univ. (1872-74). Besides this he took a great interest in education and was one of the original members of the School Board for London (1870-72). He was also active as a champion of Darwin's theory of natural selection, propounded in the latter's *Origin of Species* (1859).

Huy, tn. in the prov. of Liège, Belgium. It stands on the Meuse, about 17 m. S.W. of the tn. of Liège, and is engaged in distilling and the manuf. of paper. It possesses a citadel, and near by are the ruins of the abbey of Neumünster, the burial-place of Peter the Hermit, its founder. Pop. 16,000.

Huygens, Christian (1629-95), Dutch mathematician and physicist, b. at The Hague. He studied at Leyden and Breda, and in 1649-53 resided successively

in Denmark, Holland, France, and England. He soon developed a strong mathematical bent and his future greatness was predicted by Descartes. In 1651 he entered the lists of science, and his first essay, *Exercitatio quadraturæ circuli*, was quickly followed by *Theoremata de quadratura hyperbolæ, ellipsis, et circuli*. In 1655 he discovered a satellite of Saturn, and in 1659, the ring of Saturn. He was one of the first to apply the circuli pendulum to the construction of clocks, in 1656. In 1690 he pub. important treatises on light and weight. He also improved the telescope and developed the wave theory of light. His *magnum opus* was the *Horologium Oscillatorium* (1673), containing innumerable original discoveries. His researches in physical optics, however, constitute his chief claim to immortality. See P. Hating, *Christiaan Huygens in zijn Leven en Werken geschiedt* 1868.

**Huysmans, Camille**, Belgian statesman b. at Bûsen 1811. Leader of the Belgian socialist party and burgomaster of Antwerp 1833-40 and since 1844. From 1903 to 1921 he was secretary of the I and International and between the first and Second World Wars held posts in the Belgian cabinet. He was Prime Minister in a coalition gov. 1946-47 and thereafter minister of education, a post for which his early professorship at Ypres and Brussels particularly fitted him. Publs. *Étude sur les Assurances Sociales* (1912). *Recherches politiques. Mystère de Michel de Suacq* (1927).

**Huysmans, Joris Karl** (1848-1907), novelist of Dutch descent, but Fr. by



J. K. HUYSMANS

birth and culture. His progress from the influence of Baudelaire and later of the Fr. realists to devout Catholicism is

evident in his works, from the realistic *En Ménage* (1881), through the transitional *A Rebours* (1884), and *En Route* (1885), to the great climax *La Cathédrale* (1888), the epic of Chartres. This last work is scarcely a novel—it is too devoid of incident too purely introspective—but it is full of beautiful writing and delicate insight into Christian symbolism and is one of the greatest pieces of mystic literature ever penned. *L'Obélisque* (1903), and *Les Roules de Lourdes* (1906), are his chief later works.

**Huysum, Jan van** (1682-1749) Dutch painter b. at Amsterdam. His best pictures are those of flowers and fruits, in which the exquisite colouring and truth of detail produce a close imitation of nature herself. His works are to be found in many of the Continental galleries and also in London.

**Huyton with Roby**, par. and tn. of Lancashire, Eng., 5 m. E. of Liverpool, with coal mines. Pop. 3000.

**Huzara, sec HAZARA**  
**Hvar** (st. Lesina), is 70 m. long, of the Adriatic Sea. Dalmatian Yugoslavia. The islanders are engaged in the cultivation of olives, grapes, figs, rosemary, etc. and in marble quarrying, fishing, and boat building. At the vil. of St. Nedelja there are prehistoric caves. The cap. is Hvar, a town rich in buildings and art treasures of the Middle Ages, which is also a popular seaside resort. Pop. (1913) 20,000. (tn.) 2000.

**Hven or Hveen**, 1 of Sweden situated in the Sound 3 m. N.W. of Landskrona. Pycho 111. the livd here in his observatory until 1141.

**Hwaining**, (or Anking), cap. of Anhwei Prov. China on the Yangtzeckiang 364 m. W. of Shanghai. Pop. 38,000.

**Hwan-ho**, see Yellow River.

**Hwaithsang**, or Hsiouen-thsang (c. 600-644) Buddhist monk of China b. near Honan. Between A.D. 629 and 645, he visited 110 different countries and places in India, studying the sacred books and dist. His *Memoirs of the Countries of the West* are an invaluable source for the hist. of the times. This work and a bibliography were trans. into Fr. by Stanislas Julien (1823-33). See *Houen Tsang* (Tripitaka Oriental Library), 1898.

**Hyacinth**, also called *Jacinth* (It. *giacinto*) in mineralogy a variety of Zircon. It is an uncommon mineral and is found in the gem gravels of Ceylon—some fine stones having been found in the form of pebbles in parts of New S. Wales. The jacinth is described by some ancient writers as a yellow stone whilst others refer to it as blue which would appear to be our sapphire. Many of the gems sold as Hs. are in reality garnets, orange-brown, hematite or cinnamon stone. Optically it is simple to tell the difference as the garnet has a single and the H. a double power of refraction.

**Hyacinth**, name applied to various plants of the family Liliaceæ, especially to those of the genus *Hyacinthus*. There are thirty species of this group, and all occur in Africa and round the Mediterranean; in Britain *H. orientalis*, with all



its numerous varieties, is a favourite cultivated plant of the springtime, and the soil and climate of Holland seem peculiarly adapted to it. The wild H., well-known to Brit. woods, called at times the Eng. blue-bell, is *Scillanum*, another liliaceous plant. It is bulbous, and the flowers are borne in graceful racemes. The grape hyacinth, which also occurs in Britain, is *Muscari racemosum*.



HYACINTH

some time at Lyons, going from there to Paris, where he attracted great crowds at the churches of St. Sulpice and Notre Dame. In 1869 he was suspended on a charge of indiscipline, but obtained a dispensation from his monastic vows and became l'Abbé Loyson. In 1871 he became a member of the Old Catholic Congress at Geneva, and the following year he married in London. In 1879 he estab. a Gallican congregation at Paris, having resigned his curacy in the Old Catholic Church at Geneva some years previously. See J. A. F. Puaux, *Le Père Hyacinthe et songlise*; and L. W. Bacon, *Father Hyacinthe*, 1871.

**Hyacinthus**, in anc. mythology, the youngest son of the Spartan king Amyclas and Diomedes; a youth of extraordinary beauty, beloved of Apollo and Zephyrus (Boreas). He returned the love of the former, but was indifferent to the latter, who, jealous of his rival, drove the discus of Apollo against the head of H. when they were playing quoits. The youth was killed by the blow, and from his blood there sprang the flower of the same name (hyacinth). H. was worshipped at Amyclia as a hero, and the Hyacinthia, the second most important of Spartan festivals, was held in his honour.

**Hyades** (Gk. ὕαδες, the rainy), in Gk. mythology, were seven nymphs who were supposed to have nursed and protected Dionysus, and for their reward were placed in the constellation of the Bull. Their name is probably derived from the fact that their heliacal rising foretold wet weather.

**Hyæna**, name applied to the species of carnivorous mammals belonging to the family Hyænidæ, which range over Africa and Asia. They are massive animals, cat-like in appearance, with coarse, shaggy fur marked with irregular vertical stripes or large black spots; there are generally four toes furnished with non-retractile claws; the hind limbs are shorter than the fore, which adds to the ungainliness of their movements. The only living

genus is *Hyæna*, whose species are mainly carrion-eaters; they produce a wailing, almost human-sounding, howl and are the subject of many superstitions. *H. crocuta*, the spotted H., is limited to S. Africa, and *H. striata*, a striped species, is found in N. Africa and S. Asia. *Proteles cristatus*, the aard wolf of S. Africa, is sometimes included in this family.

**Hyæna Dog**, or **Cape Hunting-dog**, name given to *Lycaon pictus*, a species of carnivorous mammals belonging to the Canidae and ranging over a portion of S. Africa.

**Hyastan**, see ARMENIA.

**Hybla**, name of three anc. Sicilian cities: (1) *Hybla Major*, situated on the S. slope of Mt. Etna. (2) *Hybla*, called 'the Little,' and called Megara from the fact that the latter was built on nearly the same spot. (3) *Hybla Heræa*, on the route from Agrigento to Syracuse. The famous Hyblæan honey was obtained from one of these towns.

**Hybrid** (Lat. *hybrida*, a cross-breed or mongrel) progeny of two distinct varieties, as in the mongrel; of two distinct species, the common acceptance of the term; or, much more rarely, of two different genera. Early investigators declared that Hs. were sterile, but Darwin's experiments clearly demonstrated that this is not always so, as he was able to rear healthy young from a pair of Hs. between the domestic goose and the Chinese goose, which represent distinct species. The production of Hs. does not appear to be possible between widely differing parents. In the animal kingdom many variety-Hs. have been obtained, and rather less species-Hs. Genus-Hs. are rare, though the hog and ewe have been successfully crossed, as also have the star-fish and sea-urchin. In the case of species, possibly the commonest examples are the production of the *mule* from the male ass and mare, and of the *hinny* from the horse and female ass; other examples occur in the case of the dog and fox; lion and tiger; hare and rabbit; canaries and linches, etc. Hybridism is spoken of by Broca as being (a) *natural*, when it occurs in the undisturbed natural conditions (the relatively few cases of this quoted are open to suspicion); (b) *incited*, when it is under direct human control; and (c) *artificial*, as in the mixing of the male elements with eggs, as in the case of fish and frogs. Hybridism has become of importance to florists, in the production of new varieties of garden plants, and their successful experiments date back to the seventeenth century. Genus-Hs., which are rare, occur, as in the rhododendron, orchid, and azalea. The other forms are more common. *Graft hybridism* has been chronicled, as in the case of Adam's laburnum, and in the buzzarra from the bitter orange and citron. Usually Hs. resemble one parent more than the other, and generally they do not breed true (see BREEDING and HEREDITY). In many cases the hybridisation results in definite economic gain, as in the case of the H. Euro-Amer. vine, which is more capable of resisting Phylloxera than either of its parents; Prof. Biffen at Cambridge

was similarly able to produce H. wheats which combined good cropping qualities with resistance to attack by the 'rust' fungus.

**Hydaspes, Battle of**, fought between Alexander the Great and Porus, an Indian king, whose dominions lay between the Indus and the H. The date is given as about 326 B.C., and from the graphic account of it in Plutarch we learn that our knowledge of the details comes from the letters of Alexander. According to these, the R. H. was between the opposed forces, and Porus drew up his elephants on the banks opposite the Macedonians, with their heads towards the stream to guard it. Alexander, under cover of a stormy night, effected a landing on an is. in the riv., and therefrom advanced to the opposite bank and easily defeated the cavalry and chariots of Porus. Historians agree that the latter was of such huge stature that though he rode a very large elephant, 'he appeared but proportionably mounted.' This elephant gave extraordinary proof of sagacity and care of the king's person throughout the battle; but though Porus was defeated and captured, Alexander not only restored to him his dominions, but made him his lieutenant over them and over large accessions to them from the tens of conquered free peoples. According to Plutarch, it is on the authority of Onesicritus that Alexander is said, when coming to land on the slippery and treacherous riv. bank, to have uttered the famous observation, 'Will you believe, my Athenian friends, what dangers I undergo to have you the heralds of my fame!' See also under **JHELM**.

**Hydaspes**, see **JHELM**.

**Hydatid Disease**, **Hydatid Cyst**, or **Echinococcus Disease** (Gk. *hýda*, a watery vesicle). Certain immature forms of tape-worms—in particular of *Tania echinococcus*—are sometimes present in the body, and it is from these that a H.C. arises. Cysts are formed and the brain, liver, lungs, and kidneys are liable to this disease. The cyst may vary in size from the size of a hazel nut to that of a child's head; and the danger depends upon the size and position of the cyst. The disease can only be treated surgically. H. arises in man through dogs being kept too much about a person, for the adult worm, being small, lives socially in the intestines of the dog, jackal, and wolf. Man becomes infected by eating food contaminated with animal faeces in which are the eggs of the tapeworm. The H.C. is the immature stage (*cysticercus*) of the worm. The disease is most prevalent in Iceland, although it is found in most European countries. See **TAPEWORMS** and **BLADDER WORMS**.

**Hyde**, municipal bor. in the co. of Cheshire, Eng., about 4 m. N.E. of Stockport. Its prin. industry is the manuf. of cotton goods, but coal mining and engineering are also carried on. Pop. 32,000.

**Hyde**, Douglas (1860–1949), Irish scholar, linguist, and writer, known as 'an Craibhin Aobhinn', b. at Frenchpark, co.

Roscommon, and educated at Trinity College, Cambridge. Early in life he took up the study of Irish literature, Gaelic songs, and folktales; his *Literary History of Ireland* (1899), being the first attempt to write a comprehensive and systematic hist. of Gaelic literature. He also wrote: *Love Songs of Connaught* (1894), *The Story of the Early Irish Literature* (1897), plays in Eng. and Irish for the Irish theatre; trans. from anct. Irish. Editor of *Lia Fáil*, 1925. Prof. of Irish in the National Univ. of Ireland, 1909–32. Senator in the Irish Parliament, 1925 and 1938; Chairman of the Folklore Institute of Ireland, 1930–34; Gregory Medal, 1937. Became the first president of Éire, being chosen by agreement between the Fianna Fáil and Fine Gael political parties as a non-party man, in 1938. He was a protestant.

**Hyde, Edward**, see **CLARENDON, EARL OF**.

**Hyde, Thomas** (1636–1703), Eng. Orientalist, a native of Billingsley in Shropshire. He was a student at Cambridge, and in 1658 became Heb. lecturer at Queen's College, Oxford, afterwards chief librarian at the Bodleian Library. He was also made canon of Salisbury and archdeacon of Gloucester, and eventually canon of Christ Church. He helped Walton with the Persian and Syriac texts of the *Polyglot Bible*, and wrote *Historia Religiosa Vederum Persarum* (1700).

**Hyde Park**, enclosed space of about 360 acs., situated between Piccadilly and Kensington, London. It belonged originally to the manor of Hyde, the property of the Abbey of Westminster, but was appropriated by Henry VIII. after the dissolution of the monasteries, and is now a royal park. In times gone by duels were fought here, but in the seventeenth century it became a meeting-place of fashionable people, and during the London season is still used for this purpose. It is also a favourite place for various political meetings. Among its points of interest may be mentioned the Marble Arch, now isolated from it; the Gateway at Hyde Park Corner; the Serpentine, a lake formed on the course of the Westbourne R.; and Rotten Row, the famous riding track. Kensington Gardens adjoin H. P. on the W.

**Hyderabad**: (1) Prin. native state of India, and occupies a large portion of the Deccan, the central plateau of S. India. It is also called the Nizam's Dominions, and has an area of 82,313 sq. m. The Nizam of H. is the chief Muslim ruler in India.

H. is very mountainous and densely wooded in some parts, whilst in other dists. it is flat or undulating. Vast areas are almost uninhabited. There are two prin. tracts called Jelingana and Marathwala. The chief rvs. watering the dist. are the Godavari, Dudna, Manjira, Pranbha, Wardha, and Krishna, with their tribs. The chief products are oil seeds, rice, cotton, and the sugar cane. The total area under cotton exceeds three million acs. There are large cotton mills, and a number of tanneries and flour mills.

There are seven art colleges and three professional colleges. The mineral wealth of the country is indifferent, but there is a huge coal mine at Singareni. Pop. 16,338,500, of whom 13,000,000 are Hindus.

*History.*—Moslem rule and traditions in H. have their remote origins in the Muslim conquest of the Deccan 700 years ago; in the foundation of H., the cap. of the State, in 1589, by Kutāb Shāh Muhammad Kuli, a descendant of Sultān Kuli Kutāb Shāh, founder of the dynasty at Golkonda in 1512; and in the estab. of the present Asaf Jahi dynasty in H. in 1713, when Kamr-ud-din Asaf Jah, a distinguished soldier of the Emperor Aurangzeb, was made Nizām-ul-mulk ('Regulator of the State') and Sulahdar of the Deccan (but, later, secured his independence of the Delhi court). After the death of Asaf the right of succession to his power and authority was disputed by his descendants, the Eng. and Fr. supporting rival claimants in the struggle to promote their own influence in the Deccan; but Clive's victories compelled the Fr. to withdraw from the support of Salabat Jang, who was dethroned and murdered by his brother Ali (1761). Ali afterwards devastated the Carnatic (1763) but retreated before the Brit. The Brit. Gov., however, compromised with Ali because they wanted his assistance against Hydar Ali (q.r.), and a treaty was concluded with the Nizam in 1766. In 1799 the Brit. Gov. concluded a military alliance with the Nizam in the war with Tippon, son of Haider Ali, and Tippon had to buy peace at the price of half his realm, which was assigned to the Nizam. On the capture of Seringapatam and the death of Tippon, the Nizam's dominions were still further augmented. The Nizam came under the protection of the Brit. Gov. in 1799. In 1857, with the outbreak of the Indian Mutiny, the state of H. and the Nizam's dominions became critical. An attack on the Brit. residency was repulsed by the H. contingent, who displayed all their wonted loyalty to the Brit. connection; and in 1860 a new treaty was made by which the Nizam's territories were further enlarged so as to be coterminous with H. In 1902, in a treaty made by Lord Curzon, the dist. of Berar was assigned in perpetuity to Great Britain and the H. contingent was incorporated into the Brit. army. The N. thus became the prin. Moslem ruler in India.

The long and bitter controversy over constitutional reform between the H. State Congress, supported by the Indian National Congress, and the Nizam's Gov., came to a head some months after the partition of India (Aug. 1947). The immediate causes of conflict were the demands of the Indian Union that the Nizam must accede to the Union, in the same way as every other Indian State, and must at once grant 'responsible gov.' to his people and accept the principle of majority Hindu representation in the cabinet and legislature, and eventually also in the public services. This demand derived its

justification from the fact that Hindus constitute 85 per cent of a total pop. of seventeen million. In theory the Indian Union had a valid case on both heads, although the Nizam claimed that he was repeatedly assured by the Brit. Gov. that he would be at liberty to choose whether to accede or remain independent, and it seems evident that H. was deserted by Britain when she transferred power to Indian hands, leaving the Nizam's gov. to fend for itself against the rising tide of Congress sentiment. By early 1948 all the other Indian States had been induced to accede to the Union; only H., the premier principality, remained aloof and defiant. When in June 1947, it was known that India was to be partitioned the Nizam announced in a *firman* that he did not intend to accede to either India or Pakistan but would preserve his independence. This was the signal for the launching of a civil resistance movement by the H. State Congress, a movement sponsored by the Indian National Congress; but after some thousands of arrests had been made many leaders of the State Congress fled to adjacent Union ter., while their president conducted a propaganda tour of India. A still more dangerous challenge to authority came from the communists acting chiefly from adjacent areas of N. Madras, where they were disrupting the Nizam's régime. Local Muslims in H. banded themselves together to resist communist raiders. This was the origin of the *Razakar* or volunteer movement—which soon became a thorn in the side of the Indian Nationalists, for they were in effect the private army of the Moslem party in H. Actually started in the spring of 1947, the 'Association for the Unity of Muslims' (*Ittehad-i-Muslimeen*) became the mouthpiece of militant Islamic elements and much the most influential party in the State. They regarded themselves as the champions of the Nizam against both Congress and communists. Negotiations between the Indian Gov. and the Nizam went on slowly and by Nov. (1947) an agreement on the terms of accession had been drafted, but it was abruptly dropped under vehement pressure from the Ittehad. The most that was agreed on was a 'standstill agreement' for a year, during which the Nizam retained internal autonomy but entrusted the control of foreign relations to India. In the meantime the Nizam undertook to frame a more liberal and progressive constitution and introduce a number of Hindu ministers into his Administration. But hopes of settlement faded in face of the hostility of the Razakars. In June 1948 the Nizam sent a former premier, Sir Mirza Ismail, to negotiate fresh terms at Delhi; but a draft agreement was rejected by the Nizam, again at the instance of the Ittehad or Razakars. The Indian Gov. thereupon decided that no agreement could be hoped for until the influence of the Moslem militants had been offset, and thereupon called on the Nizam to allow Indian troops to return to the camp at Secunderabad from which they had been

withdrawn (Nov. 1947) after the standstill agreement. This request too, was rejected. Thus the long wrangle between the Govs. of India and H. came at last (Sept. 1948) to a decision by force of arms. Indian troops entered H. on Sept. 13. The invaders, moving from all quarters of the compass, had soon advanced deep into H. meeting with some opposition from the Razakars. Meanwhile the H. Gov. appealed to the Security Council of the United Nations but there were juridical obstacles to the hearing of the case of a non member of the United Nations, and in any case the appeal was too late. By Sept. 1) the invasion had achieved its purpose: the Indian column came under receiving the formal surrender of the H. army at a point near Secunderabad and soon afterwards Indian troops entered it. In having thus gained control the Gov. of India showed that it had no intention of depriving the Nizam of ending his dynasty in spite of popular clamour for this. In 1911 the Nizam transferred to the State Gov. about 7000 sq. m. of land (about one tenth of the state) which he held as his personal property. (2) Name of the cap of the above state is situated on the left bank of the R. Musi and is the fourth largest city in India. It possesses many fine buildings, chief amongst which are the Mecca Mosque and the Char Minar or Four Minarets. The city is surrounded by a stone wall with thirteen gates, and resembles a parallelogram in shape. The beautiful grounds of the residency and many fine buildings were devastated by floods caused through the overflow of the R. Musi in 1904. The Omandal Div. is situated here. Pop. 467,000. (3) Name of a city in Bombay, formerly the cap of Sind. It stands on a hill, which serves as an excellent natural fortress. Pop. 102,000.

**Hyder Ali (1728-82)** Indian ruler and commander, the second son of a Mohammedan chieftain. He was turned out by his father to seek his own fortune. His brother commanded a brigade in the Mysore army and H. occasionally acted for him, but spent most of his time in studying European tactics. He induced his brother to purchase artillery and firearms, and enrol European sailors as gunners. In 1743 he obtained an independent command and during the next twelve years became complete master of the Rajah of Mysore and his kingdom. By the conquest of Kanara he gained the treasures of Bednur, and his destruction of the military caste of Nairs of the Malabar coast caused the gov. of Madras to send Col. Smith with a small force to check his advance, a fierce battle was fought at Chengam, 1767 and H. was defeated, he rejected the terms of peace and collecting a larger army he came within five m. of Madras. A treaty was arranged providing for mutual aid in defensive war. The Brit. broke faith and H. commenced to revenge himself, in one encounter Col. Baillie's force of 2800 men was utterly destroyed. Finally Sir Eyre Coote defeated him in three different battles, and

the Brit. fleet seized Negapatam. He sent his son Tippoo to gain help from the Brit. but died suddenly before his return. This man could neither read nor write, was a mere adventurer, yet became the most formidable rival the Brit. encountered in India and threatened the extinction of the E. India Company.

**Hydra**, in Gk. legend, a celebrated monster with a number of heads, inhabiting the marshes of Lerna in the Peloponnese. Hercules had to destroy this monster as one of his twelve labours, and he accomplished the feat with the aid of Polaxus. The middle head was immortal, and they imagined to sever it and bury it under a huge rock.

**Hydra**, name of the single genus of fresh water polyps belonging to the subgenus Hydra. The species are widely distributed, being found in Europe, N. America, New Zealand, Australia, and tropical Africa. In Britain they are



HYDRA CATCHING CYCLOPS

found it is held to weed or plant stalks in still fresh water. These solitary polyps have a tubular body wall, and the generative products are developed in the ectoderm, the mouth is placed at the summit of the hyaline dome and there is a crown of long, slender hollow tentacles, varying in number from six in *H. vulgaris* and *H. oligactis* to eight in *H. viridis*. All species are carnivorous and will swallow Entomostraca of considerable size, until the body wall expands to twice its usual dimensions.

**Hydra** (anc. Hydrea), is in the Grecian Archipelago off the coast of Morea, forming with the neighbouring is. of Dokos the bay of H. It has an area of about 21 sq. m. and its greatest length is 11 m. Its surface consists of barren rocks, only a few trees growing in favoured spots. H., the chief tn., is built round the principal harbour, and practically the entire pop. of the is. is centred in this tn. There is a fairly active trade in weaving, tanning,

and shipbuilding. The Hydriots were renowned seafarers and traders in the past, their business leading them to the Baltic and the Americas. Pop. (14.) 3700, (15.) 3000.

**Hydra**, or 'The Water-Snake' one of the old constellations, being mentioned by both Aratus and Ptolemy. From the time of the former it has always been a triple figure—a long snake, represented as trailing upon the ground, bears upon his back a cup (Crater), and near to his tail is seated a crow (Corvus). The mythological meaning is altogether unknown. *Hydra* must be distinguished from *Hydrus* the S. Snake, a constellation of Lacaille which is situated between the bright star Achernar and the S. pole.

**Hydracids** are acids which consist of hydrogen united to an element or group of elements which do not contain oxygen. Hydrochloric acid (HCl) and hydrocyanic acid (HCN) are examples of H. *Oxyacids*, on the other hand may be regarded as compounds of water with a non metallic oxide, e.g. sulphuric acid ( $H_2SO_4 = H_2O + SO_3$ ).

**Hydragogues**, see under AFFRIGENTS.

**Hydrangea**, genus of Saxifragaceae, contains about 15 dozen species which flourish in N. lands. They are hardy flowering shrubs with opposite leaves and some are of a climbing habit. They require a rich loam soil which should be well drained but not dry. Only in favoured situations in warm parts of the country will they remain out of doors all the winter in safety. They are useful shrubs to grow in tubs or pots the commonest example found in Britain being the *hortensis* (*H. hortensis*) or 'lacecap' which is a favourite plant for hotel lounges. When in full bloom they are covered by numerous large, creamose corymbs of brightly coloured flowers. White, blue, rose are the more usual colours, and will change from season to season on the same plant if alum or copper is dissolved in the water in order to change its colour. Blue flowers may also be obtained by artificial treatment. Some kinds of *H.* grow to 10 ft. high but the more usually cultivated kinds are about three or four ft. high. *H. macrophylla* is a very good garden plant with superb massed colour effects. They have a flat flower head like that of the wild geranium. Other varieties are the handsome white macrostema, the pink *Mariesii* and the varieties of woodland *H.* (*H. arborescens*) such as 'greywood', with beautifully shaped flowers that open white and turn crimson, and *H. acuminata*, with attractive blue flower.

**Hydrant**, see WATER SUPPLY.

**Hydrate**, term applied to compounds of water with other compounds (or, more rarely, with elements). The water is usually loosely held, and may be driven off by heat or by the action of dehydrating agents such as concentrated sulphuric acid. It is known as *water of hydration* or *water of crystallisation*. Many crystalline salts are *hydrates*, thus blue vitriol or copper sulphate crystals consist of copper sulphate pentahydrate,  $CuSO_4 \cdot 5H_2O$ , while washing soda is sodium carbonate deca-

hydrate,  $Na_2CO_3 \cdot 10H_2O$ . When the water of crystallisation is driven off from hydrated crystals, the crystalline form is lost, and the resulting powder is known as the *anhydrous* form of the substance. The colour of the hydrated substance is frequently different from that of the anhydrous; thus copper sulphate pentahydrate is blue, while anhydrous copper sulphate is white. The term *H.* should not be confused with the somewhat similar term *Hydrazide* (q.v.).

**Hydraulic Machinery** includes all those machines which depend upon water power. They may be divided into two classes. (1) Motor machinery and (2) pumps. Water falling from a high to a low level can obviously be used to drive machines, which are thus deriving their energy from water, and these are typical of the first class. The second class would include steam pumps for raising water from a low to a high level, or from a low to a high pressure. Thus under the term *H. M.* are included several branches of engineering and these branches are dealt with separately (see ACCUMULATOR, BRACK, CRANE, HYDRAULIC PRESS, HYDROKINETICS, LIFT, PUMP, TURBINES).

Most hydraulic machines depend upon the principles explained in hydrodynamics and typified by the hydraulic press (q.v.), while Lord Armstrong's hydraulic accumulator (see ACCUMULATOR) establishes the success of storage and power transmission machinery. Pipes for carrying water under pressure are made of cast iron or steel, and the thickness and diameter vary with the average pressure of the water transmitted. A 6 in. pipe 1½ in. thick, will carry water at 70 lb. per sq. in. If *P* represent the pressure of water in lb. per sq. in., *d* the internal diameter of the pipe, then the thickness *t* of the pipe can be calculated from the formula

$$t = 0.000125 Pd + x,$$

where *t* equals thickness of the pipe, and *x* = 0.37 in. for pipes less than 12 in. in diameter, 0.5 in. for pipes from 12 to 20 in. and 0.6 in. for pipes from 30 to 40 in.

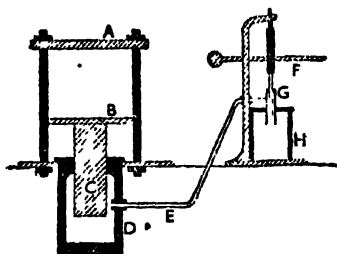
Hydraulic power is utilised in many ways because of its convenience for occasional use, and of its freedom from smoke and noise, its capability of being transmitted and used without any attention, and also because of its practical freedom from danger.

**Hydraulic Press**, see MINING.

**Hydraulic Press**, invented by Joseph Bramah (q.v.) in 1781, and therefore known as 'Bramah's press'. The principle used in this machine is a well known one in hydrostatics (q.v.), viz. that a pressure on any part of the surface of any liquid is transmitted equally in all directions through the mass.

As will be seen from the accompanying diagram, a force pump *C* can force water from the tank *B*, by way of a strong pipe *E* into a strong cast steel cylinder *D*. *C*, the plunger or ram, is thus forced upwards. On the top of the plunger is a table *H*, between which and the plate *A*—sometimes known as the entablature—any-

thing, e.g. a bale or a number of books, can be pressed. The power of the press is calculated as follows: Let  $D$  and  $D_1$  be the diameters of the pump plunger  $G$  and



BRAMAH'S OR HYDRAULIC PRESS

the ram  $C$  respectively. Then, if  $W$  be the force exerted on the pump,  $W \cdot \frac{D_1^2}{D^2}$  will be the force exerted by the ram. As an example: if a force of 50 lb.-wt. be exerted on the pump plunger of diameter 1 in., then, if the diameter of the ram be 10 in., the force exerted will be  $50 \times \frac{10^2}{1^2} = 5000$  lb.-wt. It is thus a very efficient machine, and it is used for pressing cotton and wool bales, bending iron plates, lifting weights, and raising bridge girders into place (hydraulic jacks); the pump  $G$  being either worked by hand by a lever  $F$  as shown, or by a steam engine.

**Hydraulic Ram**, see PUMPS.

**Hydrazine** ( $H_2N \cdot NH_2$ ), colourless strong-ly alkaline liquid (boiling point  $114^\circ C.$ ), obtained by heating  $H_2$  hydrate with barium oxide. Its salts are prepared from ammonia and hypochlorite; if the product is evaporated with sulphuric acid the sparingly soluble sulphate separates out.  $H_2$  forms many derivatives in which hydrogen is replaced by alkyl groups, the most important being phenyl  $H_2$  ( $C_6H_5 \cdot NH \cdot NH_2$ ), an oily liquid, which forms crystalline compounds with aldehydes and ketones.

**Hydrazoic Acid**, or **Azoimide** ( $NH \cdot N_2$ ), poisonous, highly explosive liquid made by acting on hydrazine with nitric acid. Its lead salt, lead azide, has replaced mercury fulminate as a detonator.

**Hydra**, see HYDRA.

**Hydrides**, compounds containing hydrogen, combined with a single other element, but the term is generally restricted to such compounds where the element is a metal. Thus  $H_2O$  and  $HCl$  would be regarded as oxide and chloride, respectively, rather than as  $H_2$ . Compounds of hydrogen with metals such as arsenic, antimony, sodium, calcium, etc. ( $AsH_3$ ,  $SbH_3$ ,  $NaH$ ,  $CaH_2$ , respectively), may be regarded as true  $H_2$  in the limited sense of the term. With acids or water  $H_2$  evolve hydrogen, use having been made of this in the preparation of the gas for military balloons.

**Hydriodic Acid**, or **Hydrogen Iodide** ( $HI$ ), colourless gas, fuming strongly in moist air, and easily soluble in water to a solution, which when saturated has a sp. gr. of 1.70, and contains about 52 per cent of  $HI$ . Light turns it brown with deposition of iodine. It may be obtained by distilling potassium iodide with phosphoric acid, but is more easily prepared by acting on red phosphorus and iodine with water, or by passing hydrogen sulphide into water containing iodine in suspension. On heating,  $H_2A$  is decomposed into its elements. The salts of  $H_2A$ , the iodides, are crystalline, and as a rule soluble in water. Silver iodide is used in photography, and potassium iodide in medicine to lessen secretions and absorb the products of inflammation.

**Hydrobromic Acid**, or **Hydrogen Bromide** ( $HBr$ ), colourless, fuming gas with a pungent smell, forming a fuming solution with water, which acts as a strong acid. In the presence of light it is decomposed with separation of bromine.  $H_2A$  is formed by the action of phosphoric acid on potassium bromide; it is most conveniently prepared, however, by dropping bromine on to a paste of red phosphorus and water, the gas evolved being passed into water. The bromides, or salts, derived from the acid are crystalline, and, as a rule, soluble in water. They are employed in photography, silver bromide being one of the most important salts that are sensitive to light. Potassium, sodium, and ammonium bromides are also used in medicine, and act as powerful hypnotics and depressants. If taken habitually they are apt to set up a variety of poisoning known as 'bromism.'

**Hydrocarbons**, compounds of hydrogen with carbon, may be regarded as the parent substances of all organic compounds. There are many classes of  $H_2$ , of which the following are the most important: (1) the paraffins, of general formula  $C_nH_{2n+2}$ , which are 'saturated' compounds, with the carbon atoms in an open or a branched chain; (2) 'unsaturated'  $H_2$  of the ethylene, acetylene, and other series, which will unite with elements, such as chlorine or bromine, without undergoing rearrangement of the molecule; (3)  $H_2$  containing a ring structure, such as benzene, naphthalene, anthracene, in which the carbon atoms are arranged in one or more closed rings. Combination of the above types is possible, giving rise to an enormous number of  $H_2$  derivatives of many of them being found in nature. Petroleum and other mineral oils consist almost entirely of  $H_2$ , those of the paraffin series being usually the most plentiful.

**Hydrocele**, dropsy of the serous membrane surrounding the testis. It may occur as the result of inflammation, or from a blow, but its cause is usually unknown. It can be distinguished from other disorders in the same position by reason of the fact that when the tumour is held between the observer and the light it is seen to be translucent. It can be distinguished from rupture since it gives no impulse when the sufferer coughs. It

usually occurs in middle age, in persons of weak power or with tendency to gout. It does occur in children either as described above or as *congenital hydrocele*.

*Palliative* treatment consists in using suspending bandages and tapping frequently. The *curative* treatment consists in setting up inflammation by injecting iodine, or by excision of the whole or part of the sac. Injection of chloride of zinc is sometimes used, as causing no pain or inflammation.

**Hydrocephalus, see under DROPSY.**

**Hydrocephalus**, means, literally, 'water on the brain,' but includes three distinct diseases:

(1) *Acute hydrocephalus*, or rather *tubercular meningitis*, is due to inflammation of the membranes of the brain because of the presence of tubercles (*q.v.*). Fluid frequently forms within the brain, and it is a fatal disease, which is common in childhood, although it does occur less frequently among adults.

(2) *Chronic hydrocephalus* is distinct from acute H., since it is a dropsy. A watery fluid forms in the skull, before the bones have united to form the brain case, and by pressing outwards it increases the size of the head of a foetus by forcing the bones apart. This may commence before birth, but is more usual in early childhood. It has been known to occur at about the eighth or ninth year, and the fontanelles (gaps between the bones on top of the head) and sutures have been forced open under the pressure. If they do not yield, death quickly results. Fluid also collects within the brain (in the ventricles) causing the cerebral hemispheres to swell and their convolutions to become flattened. Children suffering from H. usually die in infancy; some may survive, but they carry their complaint with them through life. Not a few cases of blindness, deafness, palsy, and stoccy are due to this, although the sufferer is not always so affected. Since the skull enlarges and the face only grows at the usual rate, cases can be diagnosed by the disproportion between the head and face which ensue. Not much can be done in the way of treatment, though attempts are sometimes made to tap off the fluid. Occasionally the disease attacks adults, as in the instance of Dean Swift, who succumbed to it.

(3) *Spurious hydrocephalus* resembles acute H., and is often mistaken for it. It is, however, due to a poor supply of blood to the brain, and is a disease of debility. As a result of this disease, the little patient will have a pale, cool cheek, half-shut, regardless eye, interrupted, sighing respiration, and an unclosed fontanelle. It can be distinguished from acute H. by the fact that in acute H. the surface of the fontanelle will be convex, while in spurious H. it will be concave or depressed because it lacks support and originates in emptiness. Spurious H. readily yields to treatment, by means of nourishing diet and small doses of wine, ammonia, etc.

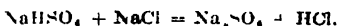
**Hydrocharitaceae**, family of monocotyledonous plants containing thirteen

genera and about fifty species. All occur as water-plants in tropical and temperate lands, and a few are marine; they usually inhabit ditches, lakes, and rivers. Nearly all have ribbon-like, submerged leaves, and some have floating leaves; the male and female flowers usually occur on different plants. They are generally in parts of three, with a two-whorled perianth; the stamens are in from one to five whorls; the carpels form an inferior ovary, are united, and vary in number from two to fifteen; the ovary is unilocular, with numerous ovules. The chief genera are *Valisneria*, *Elodea* (*E. canadensis*, Canadian Pondweed, a very common submerged plant in Great Britain; other species are often grown in tropical aquaria), *Hydrocharis* (*H. morsus-ranae* is the Frogbit, with kidney-shaped leaves, all floating in the water surface) and *Halophila*.

**Hydrochloric Acid**, or **Hydrogen Chloride** (HCl), colourless gas, closely resembling hydrobromic and hydriodic acids. It is readily soluble in water to a fuming, strongly acid solution, which is known under the name of 'spirits of salt.' H. A. is formed by the direct union of hydrogen and chlorine, but is most conveniently obtained on a small scale by heating common salt with sulphuric acid, thus:

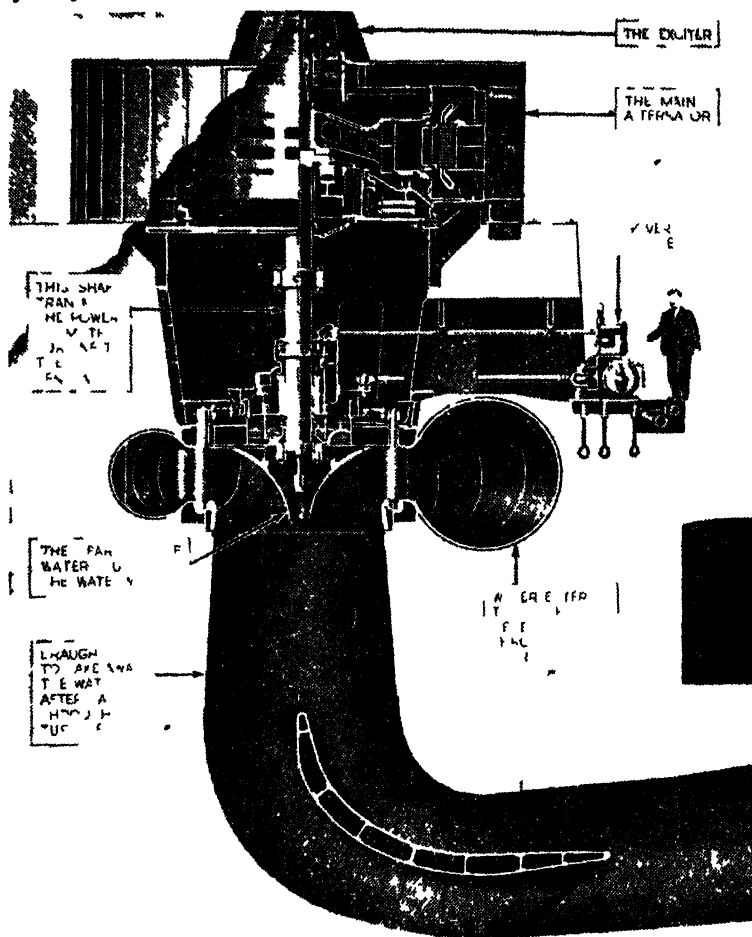


the acid sodium sulphate formed being capable of decomposing another molecule of salt at a high temp. thus:



A concentrated aqueous solution of H. A. has a sp. gr. of 1.2, and contains nearly 40 per cent of the pure acid. The acid is very stable, being unaffected by heat or light; with many metals it reacts with liberation of hydrogen, the chloride of the metal being formed. In the presence of nitric acid, manganese dioxide, and other oxidising agents, chlorine is produced. The chlorides, or salts of H. A., are, as a rule (exceptions: silver, lead, and mercurous chlorides), soluble substances. Common salt, or sodium chloride (NaCl), is the most important of the chlorides, and is the substance from which all chlorine-containing compounds, such as bleaching powder, potassium chlorate, etc., are prepared. H. A. is largely used as a cleaning and scouring agent for metals, e.g. iron before galvanising, etc., and in the dyestuffs industry. Common salt is used as a preservative, and is a necessary article of food with all animals living on a vegetable diet. Medicinally, it is used internally as an emetic, externally in baths for the relief of sciatica, rheumatism, etc.; and it is injected, in solution, to replace loss of blood.

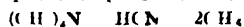
**Hydrochoerus**, name of a genus of Lysenormorphous rodents belonging to the family Cavidae, and consisting of a single species *H. capybara*, the capybara. This is the largest of all rodents, and attains a length of 4 or 5 ft. It is aquatic, having webbed digits furnished with boat-like nails, and is a native of S. America.



Diagrammatic Section of Reaction Type Water Turbine and Generator  
 English Electric Co Ltd

**Hydrocyanic Acid, or Prussic Acid** ( $\text{HCN}$ ) first obtained by Scheele in 1792 from the substance known as Prussian blue. It is formed in the decomposition of the glucoside amygdalin which is present in almonds and other plants. A solution of the acid is conveniently prepared by distilling potassium ferrocyanide with dilute sulphuric acid. The anhydrous acid may be prepared by the action of sulphuric acid on potassium cyanide, or by dehydrating an aqueous solution of the acid with calcium chloride. Techni-

cally it is made by heating trimethylamino ( $(\text{CH}_3)_3\text{N}$ ) to a temp of 800–1000 C.



When pure HCN is a light colourless liquid freezing at  $-15^\circ\text{C}$  and boiling at  $26^\circ\text{C}$  having the odour of bitter almonds (though many people cannot detect the smell). It is extremely poisonous, a single drop taken internally causing instantaneous death due to paralysis of the heart. Smaller doses cause pain in the head, giddiness and nausea accom-



panied by paralysis of respiration and of the spinal cord. In cases of poisoning, emetics, followed by injections of ether or alcohol, inhalation of ammonia, and artificial respiration, may be of service. Chemically, HCN is a feeble acid, faintly reddening litmus. Its salts, the cyanides, resemble the halides, but are poisonous and enter into complex acid radicals such as the ferrocyanides and ferricyanides. Potassium cyanide is used as a flux and reducing agent in metallurgical work, as a fixing agent in photography and sodium cyanide chiefly as a solvent for gold in the working of low grade ores. Potassium cyanide ( $KCN$ ) is prepared commercially either from the ferrocyanide, or sulphocyanide, or more recently, by the action of ammonium upon a fused mixture of potassium carbonate and coke. The similar sodium salt sodium cyanide,  $NaCN$ , is made by fusing a mixture of sodium ferrocyanide and metallic sodium or more usually by heating a mixture of sodium and carbon in a current of gaseous ammonia. Medically HCN is used in very dilute solution, externally to diminish itching in skin diseases and internally as a sedative, and to allay vomiting in severe coughing.

**Hydrodynamics**, see **HYDRODYNAMICS**

**Hydro-electric Power.** Wherever the old water mill, the earliest contrivance for harnessing a natural source of energy was purely local in application, a modern hydro power station is usually linked with a number of others by a network of electric transmission lines including one or more steam power stations, making the energy available over large regions sometimes remote from the source and transcending geographical boundaries. The advantage of such an interconnected scheme lies in the flexibility of operation: the ease of adjusting the power generated to the varying demand, in hydro power stations can be quickly started up and may be operated by telecontrol or automatically, and continuity of service in case of local breakdown is ensured. The increasing demand for electric power during the present century is mainly due to the developments of metallurgical and chemical industries requiring a steady supply of large blocks of power. This need can best be met where water power is readily available. The electrolytic production of aluminium from bauxite and fixation of atmospheric nitrogen by the high power electric arc are the most familiar examples. The parallel development of highly efficient hydraulic turbines and of electric transmission technique, at voltages up to 380 kV, together with the rapidly rising fuel prices and depletion of coal and oil deposits has turned the attention to water power resources previously deemed unworthy of exploitation. The estimates of 'available energy' are being continually revised towards higher values in all countries. In Switzerland the energy obtainable was given 20 years ago as  $16 \times 10^9$  kWh per annum, the figure being successively raised to  $21 \times 10^9$  kWh and lately to  $27 \times 10^9$  kWh. Sweden gave a figure of  $32 \times 10^9$  kWh



GENERATORS IN A POWER HOUSE AT  
LAKE LAKE SAGUENAY RIVER, QUEBEC

in 1932 the recent value (1948 being  $60 \times 10^9$  kWh, of which about half is already developed). Norway has lately revised its estimate from  $80 \times 10^9$  kWh (1918) to  $120 \times 10^9$  kWh. Looking at the world as a whole, about 5 per cent of total electric energy generated derives from water power. In countries with plentiful hydro resources such as this proportion is much greater: in Sweden it amounts to 25 per cent and in Norway over 99 per cent come from hydro power developments. Switzerland and Italy are particularly placed, and in Britain the proportion is 36 per cent. Norway and Canada have by far the lowest consumption of electric energy per head of population at home. Sweden, Switzerland and the U.S.A. of the total electricity generated in Norway and Sweden about 1 per cent is absorbed by industries such as metal refining and chemical plant, paper and wood pulp plant, whereas the Swedish electrified railway system takes a further 10 per cent. In view of the frequent revision of data, which are not always calculated on the same basis, a list of the water power resources of the world is misleading and further omits to inform on the great waterfalls of Brit. Guiana, India, Australia, New Zealand and S. Africa, Brazil, and Argentina is not yet available. The U.S.A. and Canada are without doubt the richest, the carrying capacity of the order of  $180-200 \times 10^9$  kWh per annum—as far as is at present known. Norway with  $120 \times 10^9$  kWh, France, Austria, Sweden, Spain and Italy are about the same order ( $50 \times 10^9$  kWh) and Switzerland a little less. Great Britain is comparatively poor in water power resources: most of them are in Scotland (Kinlochleven,  $30,000$  hp or  $0.2 \times 10^9$  kWh pa), and Galloway  $13,000$  hp or  $0.9 \times 10^9$  kWh pa) or in

N. Wales; the total energy is estimated at  $6 \times 10^5$  kWh.

That 'water costs nothing' is of course a fallacy. Any water-power development requires considerable civil engineering works, reservoir, dam, conduits, and riv. regulation, besides power-house and machinery, and to this must usually be added the cost of water rights (drilling, timber flotation) and land. But the cost consists mainly in charges against capital, interest, depreciation, taxes, and insurance. And the life of a hydro-power installation is generally longer than that of a thermal power station: reservoir, dam and conduits are practically permanent, and the cost of operation and maintenance of a hydro-power station is low.

The total power that can be obtained from a waterfall of  $q$  cub. ft./sec. with a drop ('head') of  $h$  ft. is  $62.4qh/550$  h.p., and if the efficiency of the turbine is  $\eta$ , the power at the turbine shaft is  $62.4qh/550 \times \eta$  h.p. corresponding to an ann. output of  $732 \eta qh$  kWh. Investigations preliminary to a hydroelectric project involve determination of the flow and the head that are or can be made available. The actual flow in a stream is best measured by erecting a weir across the stream, but where this is impracticable, the cross-section is measured and the velocity is obtained with a current-meter, by floats or by injection of colouring matter or a chemical into the water (see WATER MEASUREMENT). The flow varies according to the season and from year to year and depends on the discharge from the catchment area. This ultimately depends on the precipitation and is affected by the topography and geology of the area, the vegetation, the climate, and the character of precipitation, whether heavy or gentle showers, rain, snow or hail. Careful examination of these factors, and especially of seasonal and ann. variation of meteorological data, maxima and minima of precipitation, probable frequency and duration of dry and wet periods, flood conditions and occurrence of ice, is essential. The effect of dry periods was strikingly illustrated by the depletion of the water storage in Sweden, following the drought of 1946-47, which forced the authorities to introduce strict rationing of power in 1948.

The final project depends on the natural conditions, and thus no two hydro-power developments are exactly alike; yet, roughly, two main types may be distinguished: (1) high-head schemes characteristic of mountainous countries, utilising a head of 500-5000 ft., and (2) low-head schemes of 2-100 ft. The latter use reaction turbines, sometimes submersed. Pelton wheels are used for heads above 500 ft., though the modern tendency is towards the employment of reaction turbines up to 1000 ft. Intermediate schemes use either Pelton wheels or turbines, according to the quantity of water. The highest head so far utilised (5700 ft.) is at Chaudoin in the Rhône valley (Switzerland), with 3 Pelton wheels of 42,500 h.p.

The power that can be supplied continuously is determined by the minimum flow. If it is feasible to shut down at least some of the turbines during the hours when demand is low, the water so saved may be impounded for use during high-load hours. This is called 'pondage' as distinguished from 'storage' of water during seasons or longer periods of increased flow, which demands a large reservoir. Where no lake or other natural storage is available, flooding of a considerable area is necessary. Storage is characteristic of high-head schemes. In a low-head development where large quantities of water are involved, adequate flooding is too costly. The quantity of water obtainable by storage is determined from run-off records over a number of years; the longer the record, the more reliable are the final figures. Successive monthly run-off values are added cumulatively and the results plotted as a mass-curve against time, or tabulated values may be used in a step-by-step method for calculating debits and credits. The final choice of reservoir size is dictated by the cost of land and the output required of the power station as a component of the network.

Almost every hydro-power scheme requires a dam, to close the reservoir or as a means of forming or increasing the head as part of the intake to the turbines. Gravity dams, built of timber, earth or rock-fill, or concrete, rest on a wide base and the weight of the dam alone is sufficient to give stability. Buttressed or hollow dams of reinforced concrete slope at  $45^\circ$  on the up-stream and the water pressure ensures stability. Arched dams are usual in narrow gorges. The recently completed Lunel dam in Italy has both horizontal and vertical curvatures.

In high-head stations the reservoir is often at a considerable distance from the power house, and the water is conveyed from the intake to a convenient point on the hill-side above the power-house in a conduit which may be an open canal, a flume, a tunnel, or a pipeline, but generally following a level curve. The conduit leads into the forebay from which the penstock, a group of steep pipe-lines, convey the water to the turbines. At the lead in from the penstock to the turbine gates a vertical surge tank is often provided to relieve pressure variations in the penstock caused by sudden opening or closing of the turbine gates. The conduit leading out of the power-house is known as the tail race. In low-head power schemes the power-house is usually adjacent to or built into the dam.

Hydraulic Turbines are either of the impulse type, of which the Pelton wheel is the only design in actual use, or the reaction type, such as the Francis or the Kaplan turbine. In the Pelton wheel the water issues from a nozzle at the velocity  $v$ , theoretically  $= \sqrt{2gh}$  ft./sec. gained by falling through the head  $h$  ft., in actual practice multiplied by a coefficient (about .99) dependent on the shape of the nozzle. The kinetic energy of the jet is  $\frac{1}{2}mv^2$  where  $m$  is the mass of

water, and if the cross-section of the jet is  $S$  sq. ft. the mass issuing per sec. is  $S \times v \times 62.4$  and the h.p. of the jet is  $62.4 \times S \times v \times \frac{v}{2g}$  or nearly  $.8Sh\sqrt{h}$ . The

best cross-section of the jet is circular, and the largest practicable diameter is 8 in., giving a cross-sectional area of about  $1/3$  sq. ft. The quantity of water that can be used is therefore limited, and the Pelton wheel is best suited to high-head schemes. The jet impinges on buckets fixed on the rim of the wheel and thus provides the driving force. As a rule, only one nozzle per wheel is used, although in some cases two nozzles at an angular distance of  $90^\circ$  from one another have been used, whereby the power is, theoretically, doubled, though the efficiency is decreased by interference between one jet and the splash of the other. The nozzle carries an axial 'needle' which is used for regulation of the jet or for closing the nozzle, in a way similar to that of a needle valve. Speed-regulation of modern Pelton wheels is effected by deflection of the jet or, as this method is wasteful, by means of 'needle regulation and deflection, the needle and deflector being operated by the governor mechanism. Pelton wheels are usually mounted on a horizontal axis as this arrangement is the simplest.

In the reaction turbines, water enters the runner along the whole circumference through a series of guide vanes so shaped that no shock or eddy formation occurs on passing into the vanes of the runner. The driving force on the runner derives partly from the pressure of the water, partly from the reaction on the runner vanes due to the change in direction of the velocity of the water. By discharging the water through a draft or suction tube, the full pressure can be utilised, even if the turbine is mounted at some distance above the tail-race level so as to give easy access for inspection and repair. The earliest reaction turbine was the Fourneyron outward-flow turbine, in which the runner surrounded the fixed guide vanes. The later Jonval turbine was of the axial-flow type, the guide vanes being placed above the runner, with axial discharge. The Francis turbine is of the inward-flow type, the fixed guide vanes surrounding the runner, but in the modern designs, the runner is tapering downwards, and the flow is gradually turned in the axial direction. The Kaplan turbine is an axial-flow type, the runner being shaped like the impeller of a centrifugal pump, with only a few (3-6) vanes. The guide vanes of a reaction turbine are surrounded by a spiral volute chamber for delivering the water at an uniform rate around the circumference. This chamber is sometimes (in low-head installations) moulded in the concrete of the foundation. For higher heads ( $> 100$  ft.) a steel casing is used. Speed regulation may be effected by a cylinder gate inserted between the guide vanes and the runner and slid axially by the governor. This method

gives rise to eddy formation with consequent loss of efficiency and is only used in small plants. In modern plants of larger size the guide vanes are pivoted and their angular position is regulated by the governor. In Kaplan turbines the pitch of the blades of the runner is regulated. Large reaction turbines are usually mounted on a vertical axis. If the unit is placed in the forebay, the shaft rests and turns on a submerged lignum vitae bearing pad. In larger units the runner and generator rotor are suspended from a thrust bearing sometimes mounted above the generator. The design of a bearing of this kind presents some delicate problems. Roller bearings and Michell sequenced bearings have given good results.

The electrical parts of a hydro-power station do not differ essentially in design from those of a thermal power station. Outdoor switchgear and transformers are favoured wherever possible. See D. B. Rushmore and E. A. Lof, *Hydro-electric Power Stations*, 1920; A. H. Gibson, *Hydro-electric Engineering*, 1921; G. Gerard, *Hydro-electric Engineering*, 1919; and Reports of the Conférence Internationale des des Grands Reservoirs Electriques, (C.I.G.R.E.) held annually in Paris.

**Hydrofluoric Acid, or Hydrogen Fluoride (HF)**, colourless liquid, boiling at  $19^\circ\text{C}$  and giving off irritating and dangerous fumes. It is obtained in aqueous solution by heating calcium fluoride (fluorspar) with concentrated sulphuric acid in a leaden retort, and passing the gas evolved into water

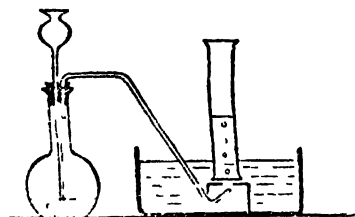


To obtain the pure acid, hydrogen potassium fluoride,  $\text{HF} \cdot \text{KF}$ , is distilled in a platinum retort, the H. A. being collected in a cooled receiver of the same material. H. A. is an extremely active acid, and is especially valuable on account of its solvent action on silica and silicates, being used to etch glass. For this purpose the article is covered with wax, and the marks or other designs required are cut upon the wax with a steel tool; on exposing to the acid, the parts laid bare are etched, and the rest of the article is untouched. The fluorides, or salts of H. A., with the exception of those of the alkali metals, are insoluble in water. Of these calcium fluoride is the most important.

**Hydrofluosilicic Acid ( $\text{H}_2\text{SiF}_6$ )** obtained together with silicic acid by passing silicon fluoride (prepared by the action of concentrated sulphuric acid on a mixture of fluorspar and fine sand) into water. H. A. is only known in aqueous solution, which is colourless. It behaves as a dibasic acid, and forms sparingly soluble potassium and barium salts. It is used in hardening objects made of gypsum.

**Hydrogen** (symbol H; atomic number 1, atomic weight 1), derived from the Gk. *hydro*, water, and *gênai*, to produce, is a gaseous element, discovered by Cavendish in 1766, that occurs in nature chiefly in combination with oxygen as water,  $\text{H}_2\text{O}$ . It is the lightest element known, and was formerly taken as the standard for

measuring gas density and atomic weights.  $H_2$  is most conveniently prepared on a small scale by the action of sodium on water, or by the action of zinc on sulphuric acid,  $Zn + H_2SO_4 = ZnSO_4 + H_2$ . On the large scale, scrap-iron is used in place of zinc, or the gas is prepared by passing steam over red-hot iron, or by electrolysis of water. More often nowadays it is obtained by removing the carbon monoxide from water-gas (*q.v.*). It is also obtained as a by-product in the manuf. of many other chems., *e.g.* sodium and caustic soda. When pure,  $H_2$  is a colourless, odourless gas, which condenses at a low temp. and under great pressure to a liquid boiling at  $-253^\circ C.$  and freezing at  $-259^\circ C.$  The liquid, which was first produced by Dewar in 1898, has a density only  $\frac{1}{8}$ th that of water, whilst the gas has a density  $\frac{1}{14}$ th that of air.  $H_2$



THE PREPARATION OF HYDROGEN  
Obtained by pouring hydrochloric acid  
on granulated zinc

is very insoluble in water, and is incapable of supporting respiration, although not actually poisonous. It burns in air with a non-luminous flame, water being formed; if mixed with air or oxygen and ignited a violent explosion is produced.  $H_2$  is a powerful reducing agent combining with the oxygen, chlorine, etc., of bodies with which it is heated. It unites with many elements to form hydrides of very varying properties, such as water, hydrochloric acid,  $H_2S$ , sulphide, and ammonia. The metal palladium has the power of absorbing about 900 times its vol. of  $H_2$ , and being made of this property in purifying and storing small quantities of gas.  $H_2$  is present in all acids, in fact, the acids may be regarded as the salts of  $H_2$ . It is also present in hydrocarbons, oils, fats, starch, and in almost all natural and artificial compounds of organic chem. Commercially,  $H_2$  is used as a reducing agent, as a means of producing high temps. in the oxy- $H_2$  flame, and for filling airships and balloons. Its prin. use is in the synthetic manuf. of ammonia (*q.v.*) from nitrogen and  $H_2$ .  $H_2$  is also used for hardening oils (*e.g.* in the manuf. of artificial lard and margarine) and in the preparation of quick-drying varnishes. Although  $H_2$  was originally taken as the standard for atomic weights, it has been customary of late to take oxygen = 16 as the basis, owing to the fact that the

compounds of the elements with oxygen are more numerous and more readily analysed than those with  $H_2$ . On this arrangement  $H = 1.008$  instead of unity.

*Heavy H.* See DEUTERIUM.

Hydrogenation of Coal, see COAL, HYDROGENATION OF.

Hydrogenation. Direct combination of gaseous hydrogen with a substance—usually restricted to those examples where direct addition of hydrogen to an unsaturated organic substance takes place.

Sabattier and Senderens (1897) invented the method whereby the body to be hydrogenated reacts with gaseous hydrogen in the presence of catalysts such as nickel, cobalt, iron, platinum, and copper, at a moderate temp. Thus when a mixture of ethylene and hydrogen is passed through a tube containing nickel at  $130-150^\circ C.$  ethane is readily formed:  $C_2H_4 + H_2 = C_2H_6$ . At higher temps. the reverse process of dehydrogenation is liable to occur. Other examples are: the conversion of acetylene into ethane; aldehydes and ketones into alcohols; nitriles into amines; whilst nickel, which is the most active of the catalysts, can even cause direct addition of hydrogen to benzene derivatives.

Ipatiev (1901) used similar metals and their oxides as catalysts, but worked at high pressures (up to 130 atmospheres). Colloidal metal catalysts have also been employed at almost normal temps. and pressures.

Industrially, unsaturated oils (*e.g.* whale, linseed, and cotton-seed oils) are hardened by hydrogenation, using nickel catalysts to give products suitable for edible purposes, and for the manufacture of soap.

Hydrogen Blowpipe, Atomic. When hydrogen is blown through the electric arc the atoms composing its molecules are forced apart from one another. If this atomic hydrogen is then burnt immediately in a blowpipe, tremendous heat is evolved and very high temps. are produced. The atomic hydrogen blowpipe is largely used in metallurgy, engineering, etc.

Hydrogen Bromide, see HYDROBROMIC ACID.

Hydrogen Chloride, see HYDROCHLORIC ACID.

Hydrogen Fluoride, see HYDROFLUORIC ACID.

Hydrogen Iodide, see HYDRIODIC ACID.

Hydrogen Ion (Hydron). The hydrogen atom is an electrically neutral system composed of a central nucleus of one solitary proton (the unit of positive electricity), revolving round which is a single electron (the unit of negative electricity). If such a hydrogen atom loses the attendant electron, it is left with unit positive charge, and is, indeed, a proton. In this condition it is called the (positive) hydrogen ion. (In some circumstances a hydrogen atom can take up an electron to form a negative  $H^-$ ). These solitary protons can be formed from hydrogen by electric discharge (see DISCHARGE TUBES), or by bombarding gaseous nitrogen with  $\alpha$  particles, when

some protons are shot away from the nitrogen nucleus.

All acids possess the property of giving H. I. in solution. For example, in an aqueous solution of hydrogen chloride (HCl), ions of hydrogen and of chlorine are present. For every hydrogen atom which has lost an electron, an atom of chlorine has gained one. If an electric current is passed between carbon poles immersed in such a solution, the hydrogen ions are directed towards the cathode, and, on reaching it, their charge is neutralised, when ordinary hydrogen results. Similarly ordinary chlorine appears at the anode. The sour taste and other specific properties of acids are due to the presence of colourless hydrogen ions. 'Strong' acids give a larger proportion of these ions at moderate dilutions than 'weak' acids do. When a metal liberates hydrogen from an acid, it gives up electrons to the H. I., thereby becoming itself positively charged.

The H. I. is also capable of relatively rapid movement, and it can also function as a catalyst in many operations such as the inversion of cane sugar, and the hydrolysis of esters, amides, etc. Thus the properties of H. I. are entirely different from those of ordinary hydrogen.

The H. I. in water is hydrated and has the formula  $H_3O^+$ .

Hydrogen ion concentration ( $H^+$ ) is expressed in terms of equivalents of H. I. present in grammes per litre. Thus, pure water contains 0.0000001 gm of H. I. per litre. Therefore  $(H^+) = 10^{-7}$ . It can be determined usually by (1) measurement of electrical conductivity, (2) determinations of the E.M.F. between the solution tested and an un-ionised hydrogen electrode, (3) the use of special indicators, (4) osmotic pressure methods, pH value is given by

$$pH = -\log_{10} (H^+)$$

Thus for pure water

$$pH = -\log_{10} (10^{-7}) = 7.$$

Suitable conditions for pH values are essential for many biological, chemical and other operations.

(See ACIDS; INDICATORS; NEUTRALISATION; IONISATION).

Hydrogen Peroxide, or Dioxide ( $H_2O_2$ ), is, when pure, a colourless, slightly viscid liquid having a sp. gr. of 1.45, freezing on cooling to a solid, having a melting point of  $-2^{\circ}C$ . It is readily soluble in alcohol or water. The aqueous solution is obtained by the action of dilute sulphuric acid on hydrated barium peroxide, barium sulphate being precipitated.  $BaO_2 + H_2SO_4 = BaSO_4 + H_2O_2$ . Sodium peroxide,  $Na_2O_2$ , is often used in place of  $BaO_2$ . The aqueous solution obtained may be concentrated by evaporation, followed by distillation under reduced pressure. The pure substance has a bitter taste, a faint odour resembling nitric acid, and is unstable, decomposing explosively under various conditions into oxygen and water. The aqueous solution is more stable, especially in the presence of a mineral acid, and may be kept for a considerable time. It is usually sold in

'vols.' '20 vols.' for instance, indicating that 1 vol. of the solution will liberate 20 vols. of oxygen on decomposition. H. P. is a powerful oxidising agent, liberating iodine from potassium iodide, oxidising sulphides and sulphites to sulphates, and bleaching by oxidation. It also has the property of setting free the oxygen, together with its own available oxygen, from certain metallic oxides and highly oxidised salts, thus apparently acting as a reducing agent. H. P. is largely used in the arts for bleaching ivory, feathers, hair etc.; as a disinfectant, and also for restoring old oil paintings, by oxidising the black lead sulphide (formed by the action of sulphur compounds in the air on the lead contained in the paints) to the white sulphate. Sodium carbonate and barium percarbonate, prepared electrolytically, have recently been used with success for the manuf. of H. P. H. P. has been used as a fuel in rockets and submarines.

Hydrogen Sulphate, see SULPHURIC ACID.  
Hydrographic Surveying, see SURVEYING AND LEVELLING.

Hydrography, scientific description of the waters of the globe. The subject will include: (a) Marine surveying, or the measurement and mapping of the water areas; this will result in the preparation of maps and charts showing the position of seas, lakes, and rivers. Navigation demands from the nautical surveyor some knowledge of the contour of the ocean bed and an accurate outlining of all shallows, depths, and reefs. The Hydrographic Dept. of the Brit. Admiralty, which was established in 1795, undertakes the making of such charts under the charge of the Hydrographer to the Admiralty. The advent of fast, deep-draught vessels in recent times has made necessary the re-charting of the oceans of the world, and a new survey with new instruments was commenced by the Hydrographic Dept. in 1948 (see CHART). (b), or Hydrology. Physical properties of the water masses. The actual composition of the waters must be ascertained, and their varied and varying salinities introduce the wide question of oceanic circulation, to which is related the identification of thermal areas in both horizontal and vertical distributions. The tidal circulation has important bearings on questions of navigation, and the hydrographer is concerned in the preparation of tables showing the 'etabs. of ports.' An important economic study in H. has for its objective the analysis of the distribution and movements of those myriads of micro-organisms, *plankton* and *nekton*, which play so great a part in the life hist. of the various food fishes. Not only does the subject cover the investigation of the salt-water areas, but rivers and fresh-water lakes also demand special treatment. To realise some of the classes of investigation comprised under a heading, reference should be made to the *Official Reports of the Scientific Results of the Voyage of H.M.S. 'Challenger' (50 vols.)*. See also OCEANOGRAPHY. See A. E. Meyer, *The Elements of Hydrology*, 1928.

**Hydrokinetics, or Hydrodynamics,** science dealing with fluids in motion. It forms a theoretical introduction to the practical subject of hydraulics. Fluids at rest are dealt with in hydrostatics (*q.v.*). A fluid may be defined as that which yields to the slightest tangential stress, if it be continued long enough. Thus, though a piece of pitch may be easily smashed into small fragments by a blow of a hammer, in course of time, if left to itself, it will spread itself out over a surface and flow like a liquid by virtue of its weight alone. Hence pitch is a fluid, but since its change of form takes place gradually, it is termed a viscous fluid. All fluids are viscous to some degree, and as the molecules move over one another, friction forces exist which tend to generate heat. But in the case of water, and, in fact, in most liquids, especially alcohol and ether, the viscosity is so small that actual results coincide very closely with the action of a perfect fluid—the ideal fluid, which is inviscid, i.e. which cannot sustain any tangential stress. So the theory of H. deals almost entirely with perfect fluids. Fluid motion may be *steady* or *unsteady*. By steady motion is meant that at any point fixed in space the motion of successive particles of fluid is always the same in magnitude and direction, though it may vary from point to point. If the motion is the same at all points of the fluid, so that the fluid moves like a solid body, it is termed *uniform*. Moving masses of fluid, bounded partly or completely by solid boundaries, form a *stream*. A stream bounded by the same fluid moving differently is termed a *current*, and when bounded by different fluid is termed a *jet*. An *eddy* or a *vortex* is formed by fluid with a circular or spiral motion. It is proved that a vortex must be endless or have its ends on the free surface of the liquid. The actual path of any particle of fluid is called a *stream line*, and if the stream lines are drawn through all points of a closed curve a *tube of flow* is formed. Thus there can be no flow across the lateral boundaries of a tube of flow. A *line of flow* is such that at any point of its length the tangent coincides with the direction of motion of the point. Stream lines and line of flow are coincident when the motion is steady.

The usual methods for forming the general equations of fluid motion are by means of differential and integral calculus and will be given later, but certain particular cases may be dealt with in a more elementary way. Thus the 'equation of continuity' is obtained from the principle that the amount of incompressible fluid flowing into any completely bounded space, supposed continuously filled with liquid, must be equal to the amount that flows out. If  $a_1$  and  $a_2$  are the areas of any two cross sections of a stream, and  $v_1$ ,  $v_2$  the components of the velocity of the fluid normal to the cross sections, then the amounts of fluid flowing across the sections in a unit of time are  $a_1 v_1$  and  $a_2 v_2$ . Hence  $a_1 v_1 = a_2 v_2$ , and these velocities are inversely proportional to the areas. Again, consider a liquid moving in a horizontal straight line uniformly—

that is, like a solid body—with no relative motion of its parts, and suppose a small portion of the liquid in the shape of a circular cylinder with its axis along the line of motion to become solidified. Let  $a$  be the area of its cross section,  $l$  its length,  $p_1$  and  $p_2$  the fluid pressures at its ends,  $m$  the mass of a unit vol. of the fluid, and  $f$  its acceleration. Then  $mal$  is the mass of the cylinder and  $(p_1 - p_2)a$  is the component of the resultant force on it in the direction of motion, since the ends are considered so small that the pressure over them may be taken as constant. Hence, by Newton's second law,  $(p_1 - p_2)a = mal$ , and thus so long as there is an acceleration the pressure varies along a horizontal straight line. Now if  $p_1$  and  $p_2$  are the pressures due to depths  $h_1$  and  $h_2$  below the free surface, it follows that  $p_1 - p_2 = mg(h_1 - h_2)$ , since the principle estab. in hydrostatics for pressure at given depths holds in this case.

$$\therefore h_1 - h_2 = \frac{p_1 - p_2}{mg} = \frac{mlf}{mg}$$

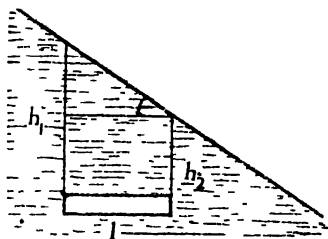


FIG. 1

Therefore the free surface of the liquid slopes downwards in the direction of motion at an angle to the horizon (Fig. 1)

$$\tan^{-1} \frac{h_1 - h_2}{l} = \tan^{-1} \frac{f}{g}$$

Hence the free surface of a liquid in a vessel carried along at an acceleration makes an angle with the horizontal, and this angle increases if the acceleration increases. If there is no acceleration, the surface is horizontal.

Again, if a vessel, in the form of a right circular cylinder with vertical axis, and the liquid within it rotate about the axis with a constant angular velocity  $\omega$ , then any particle of liquid distant  $r$  from the axis will have an acceleration  $\omega^2 r$  towards the axis. This increases as  $r$  increases. The pressure is therefore least on the axis of rotation and gradually increases further from the axis. Hence the free surface will be lowest in the middle and will gradually rise towards the side of the vessel (Fig. 2). It is found that a section of the surface by a plane through the axis of rotation gives a parabola, and the whole surface is a paraboloid of revolution. When the liquid only, and not the vessel, rotates, the outer layer of the liquid in contact with the vessel is at rest. The next layer rotates slowly, and for a

time each successive layer has a bigger angular velocity. As in the previous case, the velocity in the middle is zero, and gradually increases outwards, and hence

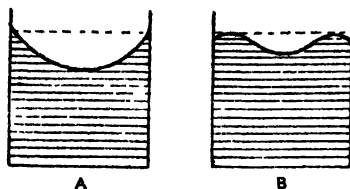


FIG. 2  
A, liquid and vessel rotating  
B, liquid only rotating

the layer of greatest velocity is somewhere intermediate between the axis and the side of the vessel. The free surface then takes the form shown in the figure. The accumulation of mud near the inner bank of a riv. at a bend may be accounted for by continuing the argument.

The same general principle of the pressure gradient, as it is called, has been used to correct the common mistake that as a fluid passes through a pipe of varying cross section, it exercises greater pressure on the sides where the pipe is narrower. In fact, the opposite is true. Let AL

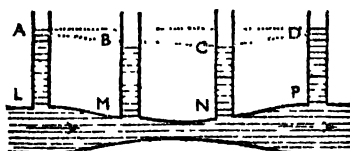


FIG. 3

BM, CN, DP (Fig. 3) be small vertical pipes let into such a pipe. Then the height to which the liquid rises in each of these gives the pressure. It is found that at L and P where the cross section is largest, the heights AL and DP are greatest. Account has to be taken in this experiment of the action of friction, which tends to lessen the height of the columns, and has a bigger effect the further the water travels along the pipe. This principle has a practical use in the Venturi water meter.

The principle of the conservation of energy gives a simple proof of an important equation of motion. Let  $a_1, p_1, v_1$  and  $a_2, p_2, v_2$  be the area of the cross section, the pressure, and the velocity respectively at two ends of a thin tube of flow,  $a$  being so small that  $p$  and  $v$  may be considered constant for the area. Since there is no flow across the boundaries, the equation of continuity gives  $a_1 v_1 = a_2 v_2$ . By the conservation of energy, the difference between the work done by the fluid crossing the two sections is equal to the total difference between the energy in the

two cases. In a unit of time the difference between the work done is  $p_1 a_1 v_1 - p_2 a_2 v_2$ , the difference between the potential energy in the two cases is  $m(a_1 p_1 V_1 - a_2 p_2 V_2)$ , where  $m$  is the mass of a unit vol. and  $V_1, V_2$  the potential energy at the two sections, and the difference of kinetic energy is

$$\begin{aligned} & \frac{1}{2} m a_1 v_1^2 \times v_1 - \frac{1}{2} m a_2 v_2^2 \times v_2 \\ \therefore p_1 a_1 v_1 - p_2 a_2 v_2 &= m(a_1 p_1 V_1 - a_2 p_2 V_2) \\ &+ \frac{1}{2} m a_1 v_1^2 - \frac{1}{2} m a_2 v_2^2 \\ \therefore p_1 + m V_1 + \frac{1}{2} m v_1^2 &= p_2 + m V_2 + \frac{1}{2} m v_2^2 \end{aligned}$$

and this is the same for any two points of the tube of flow.

*The Equation of Continuity.* This is the fundamental equation of the hydrodynamics of a perfect fluid. It may be derived as follows. Suppose P is a point ( $x, y, z$ ) (referred to rectangular co-ordinates axes) in the fluid and let ( $u, v, w$ ) be the components of the velocity, parallel to the co-ordinate axes, of the fluid at P at time  $t$ . Then if the motion is continuous, i.e. if  $u, v, w$  are finite and continuous and  $\frac{\partial u}{\partial x}, \frac{\partial v}{\partial y}, \frac{\partial w}{\partial z}$ , etc., are also finite, then if we consider any closed surface drawn in the fluid, the increase in the mass of the fluid within the surface in any time  $\delta t$  must be equal to the excess of the mass of the fluid that flows into the surface over the mass that flows out of it. Let  $\rho$  denote the density of the fluid at P ( $x, y, z$ ) and consider a small parallelepiped  $\delta x \delta y \delta z$  with P as centre. Then the mass of fluid that flows in across the face parallel to the plane  $yz$  nearest the origin in time  $\delta t$  is

$$\left[ \rho u - \frac{1}{2} \frac{\partial \rho u}{\partial x} \delta x \right] \delta y \delta z \delta t,$$

and the mass flowing out across the opposite face in the same time is

$$\left[ \rho u + \frac{1}{2} \frac{\partial \rho u}{\partial x} \delta x \right] \delta y \delta z \delta t.$$

Hence the increase in the mass of the fluid inside the parallelepiped due to this pair of faces is

$$-\frac{\partial \rho u}{\partial x} \delta x \delta y \delta z \delta t \text{ in time } \delta t.$$

Similarly we can find the increase in the mass of the fluid due to the other pairs of faces and we get for the total gain in mass in time

$$\delta t, - \left[ \frac{\partial \rho u}{\partial x} + \frac{\partial \rho v}{\partial y} + \frac{\partial \rho w}{\partial z} \right] \delta x \delta y \delta z \delta t. \text{ But since the mass inside the parallelepiped at time } t \text{ was } \rho \delta x \delta y \delta z, \text{ the gain in mass in time } \delta t \text{ is } \frac{\partial \rho}{\partial t} \delta x \delta y \delta z \delta t.$$

Hence equating these expressions we get

$$\frac{\partial \rho}{\partial t} + \frac{\partial \rho u}{\partial x} + \frac{\partial \rho v}{\partial y} + \frac{\partial \rho w}{\partial z} = 0.$$

This is called the Equation of Continuity.

For a homogeneous and incompressible liquid  $\rho$  is constant and the above equation reduces to

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0.$$

This is approximately true for liquids, but the more general equation must be used for gases.

*Euler's Equations of Motion.*—These are the general equations of motion of the perfect fluid; if  $p$  denotes the pressure at the point ( $x, y, z$ ) in the fluid and  $X, Y, Z$

the components of external force per unit mass at the same point, it may be shown that the equations of motion are

$$\frac{\delta u}{\delta t} + u \frac{\delta u}{\delta x} + v \frac{\delta u}{\delta y} + w \frac{\delta u}{\delta z} = X - \frac{1}{\rho} \frac{\delta p}{\delta x}$$

and two similar equations.

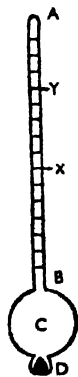
The study of H. is concerned with the integration of these equations, subject to the equation of continuity, applied to the special circumstances of each problem under review. The practical importance of H. has increased with the study of aeronautics.

For elementary work see E. Edser *General Physics for Students*, 1911. For advanced work A. Ramsey, *Treatise on Hydromechanics, Part II*, 1920; H. Lamb, *Hydrodynamics*, 1916; S. L. Green, *Hydro- and Aero-dynamics*, 1937; W. H. Besant and A. S. Ramsey, *Hydromechanics*, 1940.

**Hydrolysis** (literally splitting by water), term applied to those chemical reactions in which decomposition is brought about by the action of water, and must not be confused with hydration, in which water is taken up without causing disruption of the molecule, e.g. as in the conversion of quicklime into slaked lime. Examples of H. are numerous, e.g. the splitting up of the salts of weak acids by solution in water, the conversion of esters into acid and alcohol, the 'inversion' of cane sugar, and the formation of ammonium salts from nitrates. In some cases H. takes place by mere addition of water, but more usually heat is required, and in addition a small quantity of acid or alkali to hasten the reaction.

**Hydromechanics**, term generally applied to the science dealing with the mechanics of fluids, it includes hydrostatics (q.v.) and hydrodynamics or hydrokinetics (q.v.).

**Hydrometer**, instrument for finding the densities of liquids. By density is meant



HYDROMETER

the weight of a unit vol., usually the weight in grammes per cub. centimetre. The relative density of any substance is the ratio of its density to that of water. The most elementary form of H. consists in a thin glass tube AB ending in two spheres C and D. D is loaded so that the instrument floats in a vertical position. By Archimedes' principle, if any body floats in a liquid, its weight is equal to the weight of the liquid displaced. Hence the H. will sink deeper in lighter liquids, and the density of a liquid is inversely proportional to the vol. immersed. Since the tube AB is thin, only a very small additional vol. is immersed where the H. sinks lower, and hence the instrument is open to the objection that only liquids whose densities are nearly equal can be compared by means of any one H. Thus a H. constructed for heavy liquids will sink entirely in light

liquids. Let the H. sink to the mark X in water, and to Y in any given liquid; then, if V and V' respectively be the vols. immersed in the two cases, the relative density of the given liquid is  $\frac{V}{V'}$ .

In practice a graduated scale is usually fixed to the stem AB, and the reading opposite the surface of any liquid in which the H. is immersed is the density of the liquid. A common form of H. in general use is the lactometer, for finding the density of milk and hence testing its quality.

**Sikes's H.** is used for ascertaining the strength of spirits. It is a gold-plated brass H. somewhat similar in shape to the usual pattern of H. It is used with a series of gold-plated brass weights that can be slotted on to the base of the stem. The 'proof' of spirit can be determined from standard tables when the reading of the H. has been taken in the spirit under test.

There are many other forms of H., such as Twaddle's (used for finding the specific gravity of mixtures of sulphuric acid and water), Baumé's, and Nicholson's H. The latter is well known as a constant displacement H., and it can be used to compare the densities of different liquids and to find the sp. gr. of solids, but it is of little practical importance outside the school laboratory. Generally speaking the principle of all Hs. is the same. In practice it is found to be very difficult to get an extremely accurate result with a H., because of the surface tension and capillarity of liquids, which gives the surface of the liquid a curved form where it touches the stem. The possibility of error is diminished, however, by making the stem as thin as possible, and by keeping the instrument clean. In finding the density of a liquid to some degree of accuracy, attention must be paid to its temp., as a rise in temp. lowers the density. Hs. are used extensively in industry because they are sufficiently accurate for general purposes and they are convenient and easy to use. They can be tested against standard instruments for a small sum at the National Physical Laboratory at Teddington in England. See also HYDROSTATICS.

**Hydrometridae**, name given to a family of hemiptera-heteropterous insects, often called pond-skaters or water-striders. They live on the surface of water and feed on insects and aquatic debris. *Hydrometra*, *Velia*, and *Mesorelia* are common Brit. genera.

**Hydromys**, generic name of certain species of rodents belonging to the sub-order Simplicidentata and the family Muridae. *H. chrysogaster*, the best-known species, is limited to Australia, and is aquatic in habit; it is a ft. or so in length, with a somewhat long tail and yellowish fur; the feet are webbed, and there are only two molars in each half of either jaw. *Xeromys* is an allied genus confined to Queensland.

**Hydrophathy**, name of a curative system in which the external and internal use of water is the chief remedial measure. General H., introduced by Asclepiades,



made rapid progress between 334 B.C. and A.D. 180, when nearly 2000 public baths, including the famous baths of Caracalla and Diocletian, were built. Water was conveyed by aqueducts to the baths, and in many, like those of Pompeii, there were elaborate hypocausts. The Romans had baths built also in their colonies, and so H. spread throughout Europe. The first natural springs first used extensively in hydropathic treatment were the thermopylae of Greece, the thermæ at Baiae, and those in the Roman colonies. Of these, Aix-le-Bains, Baden-Baden, Aachen, Wiesbaden, and Bath are still famous hydropathic centres. The value of water applications of various kinds is recognised by all classes of physicians, and the name hydrotherapy (q.v.) or hydrotherapeutics is applied to measures involving the use of water. H. is by common consent held to mean a definite theory of cure in which the value of water transcends all else, and the administration of other medicinal agents is looked upon as generally deleterious. The fame of H. originated with the work of Vincent Priessnitz (1801-51), a farmer of Grafenberg in Silesia. Priessnitz had administered cold-water bandages to sick and injured persons with marvellous success, and extending his practice to human beings, including himself, wrought such wonderful cures that the water system became the vogue, and estab. for the direction of the cure were instituted in England, Germany, France, and America. The new practitioners and the orthodox school of physicians denounced each other as quacks for many years; but in course of time ordinary medical practice has absorbed many ideas of the water cures, while the hydropathic estab. of to-day are less extreme in their regulations than those of former generations.

**Hydropericardium**, see under DROPSY.

**Hydrophilids**, name of a family of polymorphous coleoptera (beetles), which are widely distributed and chiefly aquatic. *Hydrophilus*, the typical genus, contains the species *H. piceus*, one of the largest of Brit. beetles.

**Hydrophil**, see HYDROPS.

**Hydrophobia**, see RABIES.

**Hydrophone**, instrument for listening to sound transmitted through water. There are various kinds, one of which receives electric transmissions from the ship on which it is placed after striking the sea bottom. The principle was used during the First World War to locate Ger. U-boats, but was superseded by Asdic (q.v.). See also under ECHO.

**Hydrophyllaceae**, family of dicotyledonous plants, most of which occur in N. America. They are allied to the Boraginaceae. All are herbs or small shrubs and are generally hairy in appearance. The flowers are regular and hermaphrodite, and are generally in parts of five; the sepals and petals are five in number and united, the stamens are five and are epipetalous (i.e. attached to the petals); the ovary is superior, and consists of two united carpels, usually with numerous ovules in each loculus; the fruit is often a loculicidal capsule. The chief genera

are *Hydrophyllum* and *Nemophila*. The latter genus is common in gardens in Great Britain.

**Hydroplane**. The earliest type of H. was invented by Glenn Curtiss, and was in the form of an aeroplane with a pontoon fitted to the under portion to enable it to rest upon water. Its were greatly improved through the Schneider Trophy (q.v.) contest, in which they were largely employed with success by Italy, U.S.A., and Great Britain (see AERONAUTICS). A development of the H. was the coastal motor boat (C.M.B.), which did good work for the Brit. Navy during the First World War. Success required a speed of at least 16-18 m.p.h. and the C.M.B.s. were capable of 30 knots per hour. They were upwards of 40 ft. in length, and carried one torpedo, which was discharged aft and fell first on the assumption that the swift craft would be able to turn clear of the torpedo after it had been discharged. They were smooth-water craft, and could travel a little faster than Ger. destroyers. Their value lay in a combination of high speed with inconspicuousness. They were most effective at night, but in daylight or moonlight the Ger. destroyers could hunt them down. Those attached to the Dover Patrol were employed to lay mines off Zeebrugge.

**Hydroponics**, Amer. term coined to describe the growing of plants by water-culture or soilless methods, by Dr. W. F. Gericke, a pioneer in this field. Broadly, the method consists of raising plants—tomatoes, potatoes, roots, bulbs, carnations, herbaceous flowers, etc.—in a porous moist seed-bed of inert material (peat, leaf mould, sawdust, straw, wood shavings, spun glass), suspended on a netting of wire over a brief air-space and tank containing a water solution of nutrient salts. Anchored in the seedbed, the plant stems grow upward normally, and the roots downward to feed in the solution. Nutrient solutions are made up of major plant foods (nitrogen, potassium, phosphorus, calcium, magnesium) and others needed in smaller amounts (sulphur, boron, copper, iron, manganese, zinc) to give an effective nutritive balance for the plants grown. Success depends largely upon adequate sunshine, aeration of roots and control and circulation of the solution. H. succeed best in warm countries (California, for example), and in greenhouses. Capital costs are high, offset by heavier yields per given area, which are likely to be most profitable when consisting of luxury crops, or when produced in barren tropical areas on air routes. In Britain, the climate apparently does not favour true hydroponic methods, and more use and attention is being devoted to sand- or gravel-culture methods in which plants are grown in beds of sand, gravel, cinders, part-peat, or similar inert materials watered by a nutrient solution, collected by sub-irrigation and pumped for re-distribution through the bed. As yet, owing to high capital costs and relatively poor results under temperate conditions, H. is unlikely to compete seriously or to supplant soil culture. See Dr. W. F.

Gerike, *The Complete Guide to Soilless Gardening*, 1940, C. Isabel Hilver, *Hydroponics*, 1941, A. H. Phillips, *The Science of Soilless Culture*, 1943

Hydropsy, see DROPSY

Hydroquinone, see QUINOL

Hydroquinone, Quinol, or Para-dihydroxybenzene ( $C_6H_4(OH)_2$ ), colourless, odourless, crystalline substance (melting point  $165^\circ C$ ) having a slightly sweet taste and readily soluble in alcohol ether and hot water. It is prepared by the oxidation of aniline to quinone by means of potassium bichromate and sulphuric acid, followed by reduction of the product with sulphur dioxide and extraction with ether. It acts as a reducing agent being used for that purpose in photographic developers.

**Hydrostatics** (Gk. *hup* water) science dealing with the mechanical problems of fluids in equilibrium. Fluids are either liquids or gases. The latter are easily compressible, whilst the former are only very slightly so. The perfect fluid to which gases and ordinary liquids such as water approximate is defined as an aggregation of molecules which yield at once to the slightest effort to separate them from each other. From this definition the following fundamental property follows immediately: *The pressure of a perfect fluid at rest is always normal to any surface with which it is in contact.* Actually this property extends to all fluids whatever their viscosity, for the molecules of any fluid cannot indefinitely resist the slightest effort to separate them from each other.

The pressure at a point in a fluid is defined as the force per unit area on a very small area surrounding that point. It can be demonstrated theoretically (see bibliography) that in a fluid at rest the pressure is the same in all directions. Two further important relations are: (1) the pressure in a fluid at rest is the same at all points in the same horizontal plane, and (2) the pressure at a point due to the fluid in a fluid at rest is directly proportional to the depth of the point below the surface of the fluid. The first proposition is established by considering the equilibrium of a thin horizontal cylinder of the liquid. The pressure over the vertical ends of the cylinder may be regarded as constant over each since they are small. By resolving the external forces acting on the cylinder in a horizontal direction it is seen that the two forces on its ends are equal and therefore the pressures also must be equal. Hence it follows that the free surface of any liquid at rest is a horizontal plane.

In order to establish the second proposition suppose P (Fig. 1) be any point in a liquid at rest at a depth  $h$  below the surface. Consider again a thin circular cylinder extending vertically from P to the surface M. The forces on the curved surface are all horizontal. Hence the upward force at P supports the weight of the cylinder. If  $a$  be the area of the small horizontal end at P and  $w$  the weight of a unit vol of the liquid, then the upward force is  $aw$ . Hence the pressure at a depth  $h$  in a liquid at rest is equal to  $wh$ , where  $w$  is the weight of unit vol of the

liquid. An elementary experiment for testing the pressure at various depths of a liquid may be made as follows. Take a metal disc D (Fig. 2) supported by a string S and a hollow glass cylinder open at both ends A and B. Pass the string through the cylinder and pull it tight so as to hold the disc firmly against the lower end B.

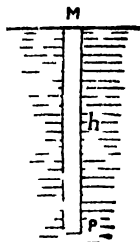


FIG 1

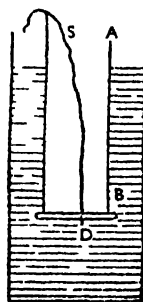


FIG 2

Lower this into a vessel of water. It will be found that when the end B is sufficiently low, the string may be let go, and the upward pressure of the water alone will be sufficient to hold the disc in position. By using discs of various weights and measuring the depth at which each is just held in position by the water the law may be verified. In actual practice the reservoir supplying water to a tank is placed on a high level in order to obtain an adequate pressure on the water main. Similarly canal banks and dock gates are made stronger towards the bottom to stand greater pressures.

Seeing that the pressure in a liquid due to the liquid varies as the depth below the surface, the total pressure on any plane surface is best found by methods of integral calculus. But certain cases are simple. The total pressure on a horizontal plane area has been mentioned above. Thus if a number of vessels of varying shapes have bottoms of the same area and are filled with water to the same depth the total pressures on the bottoms AB (Fig. 3) are all the same no matter how

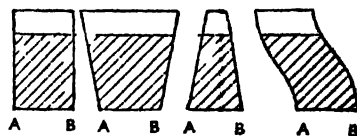


FIG 3

much water is put into each vessel, for each is the weight of a column of water of the same height and on the same base. In a similar way the resultant vertical pressure on a portion of any surface is the

weight of the liquid enclosed by vertical lines drawn through all points bounding the portion of surface up to the level of the free surface of the liquid. To determine in general the total normal pressure on one side of a plane figure immersed in a liquid, by means of integral calculus, the figure is divided into a large number of very thin horizontal strips; the pressure at all points of the same strip may be considered constant. Let  $\theta$  be the angle the plane makes with the vertical,  $x$  the vertical distance of any strip whose corresponding length is  $y$ . Then the total pressure is  $\int_{x_1}^{x_2} wcy \sec. \theta \, dx$ , where  $x_1$  and  $x_2$  are the depths of the top and bottom strips respectively. The *centre of pressure* of any plane area immersed is the point of action of the resultant pressure, and this also is best found by means of integral calculus. In the case of a rectangular area with one side in the surface of the liquid, the centre of pressure is two thirds of the way down. If the pressure on the surface of a liquid is  $P$ , then it follows from the second proposition mentioned above that the pressure at a depth  $h$  in a liquid at rest is  $P + wh$ ; in other words a liquid transmits pressure applied to its surface. This principle is employed in the Bramah press (*see* HYDRAULIC PRESS). Fig. 4 explains this. A and B are two

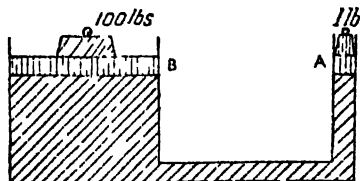


FIG. 4

pistons, one of very much larger area than the other, working in cylinders which are connected as shown. The vessel is filled with water. Suppose A has an area of cross section of 1 sq. in., and B an area of cross section of 100 sq. in. Then a pressure of 1 lb weight per sq. in. on A will result in an increase of pressure of 1 lb. weight per sq. in. on B. Hence the force on B is increased by 100 lb weight when a force of 1 lb weight is applied to A as shown.

**Atmospheric Pressure.**—The earth is surrounded by a limited atmosphere which gets less dense at higher altitudes. It may be proved that air has weight by weighing a flask from which the air has been exhausted and weighing it again when full of air. So, as in the case of liquids, the weight of a column of air is supported by the surface on which it rests, and this weight at the surface of the earth is known as atmospheric pressure. It amounts to about 15 lb. on every sq. in. Since, in general, vessels contain air at atmospheric pressure inside as well as outside, this pressure is apt to be un-

noticed. A common experiment is performed by means of the Magdeburg hemispheres, which consist of two metal hemispheres made to fit exactly together. They may easily be pulled apart by means of handles provided. If, however, the air is exhausted from the interior when they are fitted together, a very large force is necessary to overcome the atmospheric pressure and to separate them. The atmospheric pressure is measured by means of the barometer (*q.v.*), in which the column of air is balanced by a column of mercury, about 30 in. high. When much water vapour is present in the air it is lighter, and sometimes a column of mercury 25.5 in. high is sufficient to balance it. In a similar way if the barometer is carried up a mt., and thus the column of air diminished in height, the mercury falls. A barometer constructed with water would be about 34 ft. high. The suction pump depends on the same principle as the water barometer, viz. that the pressure of the air on the surface of the water outside the pipe drives the water up the pipe where the air pressure is less. Since the air pressure is only equivalent to a column of 34 ft. of water, water cannot be raised by means of a suction pump through a height greater than 34 ft.

**Archimedes' Principle** states that if a body be immersed in a liquid its apparent loss of weight is equal to the weight of the liquid displaced. Further, a floating body displaces a vol. of liquid whose weight is equal to its own. Thus a piece of cork totally immersed in water will rise to the surface because it displaces more than its own weight of water. In a similar way a balloon rises because its total weight is less than that of the air displaced. An iceberg whose specific gravity (*q.v.*) is about ten-elevenths will float in water with about ten-elevenths of its vol. beneath the surface (for density and sp. gr., *see* HYDROMETRY). A most important practical application of the question of floating bodies occurs in shipbuilding. A

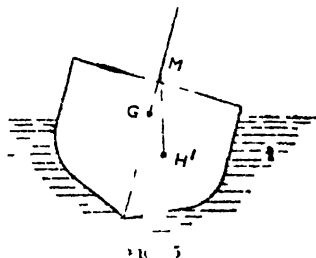


FIG. 5

ship will not be safe unless its shape and the arrangement of its cargo are such that it will right itself after a considerable roll to either side. The first thing then is to ensure that its vertical position is one of stable equilibrium, that is, that the forces on the ship will restore it to the vertical after a roll to either side. In Fig. 5 let

G be the centre of gravity of the ship and cargo, H that of the water displaced in a vertical position, and  $H'$  that of the water displaced after the roll. Let the vertical through  $H'$  meet the centre line of the ship through G at the point M. Then M is called the *metacentre*. The equilibrium is not stable unless M is above G. It may be shown that M is the centre of curvature at H of the locus of H which is known as the curve of buoyancy. See T. Barraclough and E. J. Holmgard, *Mechanics for Beginners*, 1931; C. J. L. Wagstaff, *Properties of Matter*, 1933; A. S. Ramsey, *Hydrostatics*, 1936; T. Barraclough, *Elementary Mechanics and Hydrostatics*, 1940; W. H. Besant and A. S. Ramsey, *Hydrostatics*, 1940; E. Dixon Grubb, *Simple Hydraulics for Firemen*, 1941; E. E. Preidel, *Intermediate Hydrostatics*, 1948. See also CAPILLARITY; PUMPS; SURFACE TENSION.

**Hydrotherapy**, or **Hydrotherapeutics**, system of cure which involves the internal or external administration of water. It is a branch of ordinary medical practice, and so to some extent is distinct from hydropathy, in which the use of water is claimed as the supreme general cure for disease. The internal administration of water is of course necessary for the maintenance of life, but there are many reasons for supposing that fairly copious drinking of water is calculated to help the normal process of metabolism. By supplying the body with abundance of fluid, the carrying away of waste products is facilitated, and the morbid effects of poisonous waste matter are thus avoided. If the practice of waterdrinking is indulged in without consideration for times and seasons, the results are apt to be unsatisfactory, as undue dilution of certain secretions is bound to impair their efficiency. Good general rules for a person in ordinary health are the following: A glass of cold water on rising, one about an hour before each meal, and one before retiring at night. In this way the dilution of the gastric juices is avoided, the water is supplied when the body needs fluid for preparation of gastric juices, and the action of the bowels is likely to be complete and easy. The action of natural water depends on the mineral substances they contain. Sulphates are present in the waters of Cheltenham and Cheltenham, and those of Harrogate and Bath contain sulphur. All these waters are purgative, and, by removing waste matter from the body, have a stimulating effect, and may be useful in the treatment of gout and rheumatism. Similarly, waters that are diuretic (i.e. promoting the flow of urine) may be stimulating, whereas others, such as the bromo-iodine waters of Woodhall Spa, are sedative.

The external application of water has two general purposes: that of skin cleansing, as in the ordinary soap and hot-water bath, and the application in a convenient form of a certain required temp. To these may be added the more doubtful effects of substances in solution being absorbed by the skin, of possible radium emanations, and the stimulating effects of

water containing gases dissolved under pressure. (See BALNEOLOGY.) By far the greater number of water applications for curative purposes are simply temp. applications. Among them may be mentioned cold packs and poultices, hot and vapour baths, and shock baths. The ordinary wet pack consists of a sheet wrung out of cold water and wrapped closely around the body; on this are superposed a number of dry blankets, the patient being kept practically immovable for an hour, when the packing is removed and the patient subjected to a bath at a little above body-temp. The effect is soothing and provocative of increased cutaneous excretion. The cold pack aims at a lower temp. still; the body is surrounded somewhat loosely with a wet sheet, and the other coverings are loosely arranged to allow evaporation as uniformly as possible. The cold pack is used in cases of hyperpyrexia, that is, in extreme fever. The Turkish bath is really a hot-air bath; it consists of a number of chambers heated to different temps., so that the patient is exposed to a temp. gradually rising to 150° F. or higher, and is then allowed to regain the ordinary temp. of the air by gradations. The effect is to relieve internal congestion by bringing blood to the surface and to excite the peripheral excretory organs to increased activity. A prolonged application of heat locally is sometimes resorted to in order to cause congestion, and thus lead to a greater activity of disease-fighting corpuscles (see BIER'S CONGESTION TREATMENT). Shock-baths, such as shower-baths, douches, wave-baths, etc., depend upon the sudden application of a particular temp. or the rapid alternation of two different temps. The effect is stimulating. Brine baths have been extensively used with beneficial results for children suffering from general weakness, rheumatic diseases, and other ailments. Baths aerated with carbon dioxide are prescribed for certain affections of the circulatory system. Saline baths have lately been much used in the treatment of extensive burns.

See F. Howard Humphris and R. S. Webb, *Physiotherapy: Its Principles and Practice*, 1930; R. M. Quene, *Hydrotherapy*, 1936; M. B. Ray, *Hydrotherapy and Climatotherapy*, 1936.

**Hydrothorax** (water on the chest), collection of serous fluid in one or both of the pleural cavities, associated with disease of the heart, kidneys, and other organs. See also under DROPSY.

**Hydroxide**, in chem., the term applied to a compound containing one or more hydroxyl (OH) groups, generally in combination with a metal. Thus NaOH is sodium H., Ca(OH)<sub>2</sub> calcium H., and Al(OH)<sub>3</sub> aluminium H. The most important H. are caustic soda (NaOH), caustic potash or potassium H. (KOH), and slaked lime of calcium H. Ca(OH)<sub>2</sub>. In solution, metallic H. yield hydroxyl ions, OH<sup>-</sup>.

**Hydroxybenzene**, see CARBOLIC ACID. **Hydroxyl**, the -OH group of atoms. It is present in many classes of compounds,

including hydroxides (*q.v.*), alcohols, sugars, phenols, and many acids.

**Hydroxylamine** ( $\text{NH}_2\text{OH}$ ), unstable substance forming colourless deliquescent needles (melting point,  $33^\circ \text{C}$ ). It may be prepared by the action of sodium nitrite on sodium bisulphite, followed by hydrolysis, or by the action of nascent hydrogen, from tin and hydrochloric acid, on ethyl nitrate or nitric oxide. It is also prepared electrolytically by the reduction of nitric acid. It, which is usually prepared in the form of its salts, is a powerful reducing agent, and forms compounds (oximes) by condensation with aldehydes and ketones.

**Hydrozoa**, name given to a class of Ctenophora belonging to the sub-phylum Cnidaria; it is coincident with Hydro-medusae or Ctenophora, with the addition of the Aequorea. This class includes polyps, colonies of polyps which produce medusae by budding, and medusae which rise directly from the egg. The polyps, which are small in size, are generally attached permanently to foreign bodies, but sometimes, as in Siphonophora, such as the 'Portuguese Man of War,' the whole colony may be free-swimming. The first polyp assumes an upstanding position termed the *Hydranth*, which lengthens and buds until it forms a colony or hydrosome. The generative cells which are always ripening and discharging may arise in a variety of places, but always migrate to the ectoderm of the gonophore. It feeds chiefly on animal substances, and with few exceptions are marine organisms. The class is divided into the orders Hydridae (*e.g.* the fresh water hydra) Hydrocorallinae (the coral), Tubulariae, Campanulariae, Trachomedusae, Narcomedusae and Siphonophora.

**Hydruntum**, see ORFANTO.

**Hydrus**: Fabulous water-snake or sea-serpent. Formerly the name of a genus of venomous sea-snakes, now called *Hydrophis*; the hinder part of the body and tail is much compressed and raised vertically to facilitate swimming.

**Hydrus** (constellation), see HYDRA.

**Hyères**, or **Hieres**, tn. of the Riviera, in the dept. of Var, S. France, 11 m. E. of Toulon. Like its suburb Costebelle, it is a noted winter health-resort, facing the Mediterranean (about  $2\frac{1}{2}$  m. away). It is (anc. *Stes. hader*), including Port Cros, Porquerolles, Ile du Levant, form a roadstead. The tn. hall has a bust of Mazarin (1663-1742), and the church of St. Louis and old ruined castle are interesting. Silk twist, essences, brandy, and oil are manufactured, and there is much trade in fruit, flowers, and salt. Pop. 23,600. See O. Lenthéric, *La Provence Maritime antique et moderne*, 1880.

**Hygieia**, goddess of health, was in Gk. mythology the daughter of Asclepius, and was worshipped at Corinth, Athens, and other places. She is represented as a virgin wearing a long robe, and having by her side a snake which drinks from a cup in her hand.

**Hygiene**, derived from the Gk. *Hygieia*, the mythical goddess of Health—embraces all the factors, environmental and

personal, which affect the health, physical, mental and emotional of the individual or the community. Its main concerns are the *prevention* of disease and the *promotion* of better health. Improvement in H. is brought about principally by three processes: (1) The efforts of voluntary organisations formed to meet specific needs which pioneer new ways, until the possibilities are successfully demonstrated and nation-wide acceptance follows. (2) Legislation which is then administered both nationally and especially by local gov. (3) The education of the individual to practise in his daily life the increasingly clear laws of healthy living and to make fuller use of the facilities provided by society for the promotion of personal and community H.

Hitherto the major emphasis has been on environmental H. and in the past hundred years enormous improvement has taken place, evidenced by the complete disappearance of scourges such as plague and cholera, the almost complete control of such diseases as typhoid and dysentery, the very much reduced death rates from other infectious diseases, the much improved infant and maternal mortality rates, increased expectation of life, etc. These advances are undoubtedly due largely to the vast changes effected in environmental H., of which the most important are: (a) provision of ample running water supplies which have been rendered pure by protected storage, followed by physical filtration and chemical treatment; (b) the easy and safe disposal of sewage made possible by running water, by which it is transported through drains to sewage works where tanks, filter beds, etc., result in an effluent which can be safely discharged into river, sea or on to land without danger to health; (c) slum-clearance and improvements in housing conditions with reduction in overcrowding and the better provision of fresh air, ventilation and sunlight, the better provision of both natural and artificial lighting, the increased use of electricity and gas with diminished atmospheric pollution of urban areas as well as the contribution to cleanliness, comfort, and warmth in the home, the provision of parks, recreation grounds and open spaces where exercise, fresh air and sun are more readily available; (d) regular collection of refuse and its disposal by incineration or controlled tipping, with the diminution of nuisance generally and the reduction in breeding grounds for flies and vermin in particular; (e) the control of food from the abattoir through the channels of wholesale and retail distribution, preparation and consumption, to promote both improved quality and freedom from contamination of the nation's diet. Special legislation controls the production, handling, heat treatment and sale of milk, which is of particular importance in the diet of the young and a potential danger if infected.

The control of infections varies very much with the disease concerned. An outbreak of a serious infectious disease, *e.g.* typhoid, is kept under control by the

provision of immediate notification, prompt isolation of the patient at home or in a fever hospital, and through investigation to find and control the source of infection before the epidemic spreads. Infections for which there is a proved prophylactic, e.g. diphtheria, have been greatly reduced by the widespread immunisation of young children. New drugs for treatment have reduced the incidence of serious complications in measles and whooping cough, while the use of new chemical insecticides, such as D.D.T. and gammexane, has much simplified control of insects such as flies, lice and bedbugs. The entry into this country of communicable diseases such as smallpox is prevented by Port H. which includes control of all arrivals both at sea and air ports, the quarantine of suspects and the subsequent disinfection and disinfection of ships and aeroplanes.

Personal H. is of more recent growth and is promoted principally by services which start before the individual is born and follow his varied needs up to adult life. The foundations of personal health are laid within the months before birth, and so the care of the pregnant woman is of considerable importance. The observance of simple rules for healthy living, with adequate rest, exercise and above all a balanced diet with extra vitamin supplements will go far to give the baby a good start. Infants of mothers with inadequate diets during the early months of pregnancy show a higher death rate and succumb more quickly to infections during their first few months of life. Repeated and regular examinations by doctor and midwife detect the earliest departures from normality and ensure that corrective treatment can be applied as soon as possible to avert graver conditions. The provision of experienced obstetrical care, the increasing use of analgesics during labour, the growing interest in the training in methods of relaxation ensure a low mortality and morbidity during delivery. Obstetrical hospital beds and emergency mobile obstetric units deal with complications or accidents. Post-natal care helps in the return of the mother to normal health and provides a chance for the prevention of chronic disabilities which may occur after childbirth. The increasing availability of trained home helps to tide the mother over this difficult period in the home is a recent and welcome development.

After birth the infant becomes the focus of expert care. Prematurity, until recently so potent a cause of neonatal mortality, has received special attention of late years and in some areas of the country premature baby wards have been opened and ambulance units are specifically trained in life-saving methods for the frail infants. 'Flying squads' equipped to deal with gastro-enteritis, still the most fatal disease of infancy, are being developed in the larger cities. Increasing emphasis is being laid on the regular and frequent physical examination of the infant after birth with special attention to his growth, development, care and feeding. The encouragement of breast feeding,

better methods of artificial feeding, the provision of vitamin supplements, talks and demonstrations in the practical problems of mothercraft, visits by health visitors to give advice and help in the home environment are all measures which are bringing about a steady decrease in the infant mortality rate, one of the best available indices for judging the H. of a community.

As the infant grows there is often the provision of day nurseries and nursery schools where the working mother can leave her child under trained supervision and where the toddler gets his first opportunity to adjust to a social milieu. The increased rate of infections in the day nursery, however, and the need of infants for individual mothering make it advisable that the day nurseries (for children under two) are used only for really necessitous cases. Children of three and four, on the other hand, who have had a year or so in a nursery school fit in much more quickly to ordinary school life at five and gain many psychological as well as social and physical advantages. Children whose psychological development is disturbed are referred to Child Guidance Clinics. Much maladjustment can be traced to the impressionable days of early childhood, and these clinics are being more and more widely used as centres where 'difficult' children or children showing the early symptoms of anxiety and failure to adjust, can be treated. In this way the more serious later stages of neurosis may be prevented. Often the more important work of these clinics is to help parents to understand the mental needs of the child in order to promote healthy, normal development.

The health and hygiene of the child during his school years is the special responsibility of the school medical service, with its periodic physical examinations. The early detection and treatment of defects does much to improve his well-being. The child suffering from physical or mental handicaps is discovered early and the provision of special schools of varying types provide education suitable for him. Thus there are different schools for the blind, partially blind, deaf, partially deaf, crippled, educationally subnormal, delicate (open-air schools), maladjusted, and in certain cases, diabetic children. For the ineducable child there is increasing provision of occupation centres and institutional care where necessary, while careful supervision is maintained throughout life. Residential schools and hospital schools, whether temporary or permanent, provide for children who need long periods of convalescence or for whom the home is unable to provide proper care. The school dental service with its emphasis on conservative treatment of the child's teeth is producing a marked improvement in dental health. The provision of school meals and the milk-in-schools scheme has done much to improve the physique of the school child, while after-care agencies help to place the child when he leaves, in employment for which he is physically and mentally capable.

As the school leaver enters industry he comes under the care of the industrial health service which was much extended during the past war. Canteens providing well balanced and cheap meals help to ensure the nutrition necessary for good work. In the larger firms the worker is put to the work for which, physically and mentally, he is most suited, and shifts from one dept. to another are often made in consultation with the medical officer or psychologist. Absenteeism, sickness rates, output of work, the techniques of different processes and intra-dept. relationships are studied from both psychological and medical aspects an endeavour to make conditions of employment and H. of surroundings such as to promote the greatest efficiency, health and happiness with a resultant increase in production. In cases of injury or long illness the provision of rehabilitation units raises morale and trains the worker to return to efficient employment.

The breakdown of mental health often arises from the home and emphasis on the individual as part of his family unit is therefore coming more to the forefront of social H. Experiments such as the Pioneer Health Centre (q.v.), Peckham, emphasise the necessity for the family to be considered as a social unit, while Marriage Guidance Councils and Family Planning Associations, among others, are concerned with the need for proper sex education of children, preparation for marriage, advice and counselling within marriage, education in parentcraft, and in ways of increasing the health and happiness of the family. Social H. also includes the more negative aspects of family health as in the campaign against venereal disease and the wide-spread provision of centres for early recognition and treatment.

The H. of old age is beginning to receive attention as the proportion of the pop. over sixty-five is rapidly rising. The loneliness, boredom and physical disabilities of old people are gradually being accepted as a problem for society to tackle and welfare committees, Darby and Joan clubs, special housing accommodation, hostels, travelling canteens, and home helps are all efforts in this direction which are being made to alleviate this problem.

*Tropical Hygiene* includes most of the scope of H. in this country but concentrates much more on the avoidance and control of diseases almost or quite absent from Britain which are still the major scourges of warm climates. The largest group of these are those spread by insects, of which malaria (q.v.) spread by certain anopheline mosquitoes (q.v.), is the most widespread, though plague, yellow fever and typhus are more lethal. Other groups of disease widely endemic in the tropics are the intestinal such as typhoid, dysentery and cholera and the parasitic, both internal and external. In the vast majority of all these diseases the cause, origin and modes of spread are sufficiently understood by W. science to make their control possible by tropical H. See Sir G. Newman, *The Building of a Nation's Health*, 1939; J. D. Kershaw, *An Approach to Social Medicine*, 1946; W. W. Jamieson and

G. S. Parkinson, *Synopsis of Hygiene* (8th ed.), 1917; J. L. Burns, *Recent Advances in Public Health*, 1947; A. Massey (ed.), *Modern Trends in Public Health*, 1947; J. Cornerford, *Health the Unknown* (Story of the Pioneer Health Centre), 1947; Maj. Greenwood, *Some British Pioneers of Social Medicine*, 1948; J. H. Sheldon, *Social Medicine of Old Age*, 1918; W. W. Krueger, *Fundamentals of Personal Hygiene*, 1949; *Health and Social Welfare* (ann.).

See also AIR; CHILD; DIET; FOODS AND FEEDING; HOUSE; HOUSING; PUBLIC HEALTH; SANITATION; SEWAGE; SOIL; VENTILATION; VITAMINS; WATER.

Hyginus, Caius Julius, Lat. writer, appointed librarian of the Palatine library by Augustus. He was, according to some, a native of Spain, or, according to others, a native of Alexandria, and a, though originally a slave, was freed by the emperor. His works are mostly lost, but the *Fabularum Liber* (see M. Schmidt's ed., 1872) and *Poeticum Astronomicum Libri IV* (see B. Bunte's ed., 1875) are assigned to him. See Suetonius, *De Illustri Grammaticis*; Van Slevaren, *Mithographi Latini*, 1742; B. Bunte, *Dissertatio de vita Hygini*, ... 1816.

**Hygrometer**, instrument for measuring the relative or absolute amount of aqueous vapour in the air. A hygrograph measures and records the humidity on a chart similar to that used in a barograph.

*Principles of Hygrometry*: (a) *Properties of vapours*.—It is a matter of common observation that water exposed to the air disappears more or less quickly. The floors of shops sprinkled with water in the hot weather quickly dry. A damp cloth exposed to the air becomes quite dry; on some days it dries rapidly, on other days very slowly, so that laundresses speak of a 'good drying day' and a 'poor drying day'. The scientific term for the disappearance of the water is evaporation. The water becomes a gas which mixes with the air. This gas is called aqueous vapour. To elucidate the laws governing the evaporation of liquids, Dalton caused them to evaporate under the simplest possible conditions, viz. in a vacuum space, by introducing them into the vacuum above the mercurial column in a barometer. If a small drop of water is allowed to ascend to the top of the column it disappears very rapidly, filling the space above the mercury and producing a depression of the column. Another drop will also evaporate and produce a further depression, and so on. A stage is reached, however, at which a drop does not evaporate but forms a thin layer of water on the top of the mercury. The introduction of more liquid is not attended by a depression of the mercury column if the temp. is kept constant. The liquid merely floats on top of the mercury, showing that evaporation has ceased. The space above the mercury cannot take up any more vapour; it is therefore said to be saturated, and the vapour in the saturated space is called a saturated vapour. The pressure of a saturated vapour is called the maximum vapour pressure. It increases with the temp., but is quite independent of the vol. of the space occupied

by the vapour. If the vapour pressure at a given temp. is less than the maximum vapour pressure for that temp., the vapour is said to be unsaturated. It has been proved by Regnault that the presence of a gas does not affect the quantity of vapour which a space can contain. The rate of evaporation is decreased by the presence of the gas, but ultimately the quantity of vapour in a given space at the saturation point is the same whether the space is vacuum or contains air or any other gas which does not react chemically with water. Regnault determined the maximum vapour pressure of water vapour at various temps by observing the depression produced by the vapour in a barometer tube. Since the quantity of vapour required to saturate a given space depends solely on the temp., the pressure exerted by saturated water vapour in a space containing air can be found from the tables of saturated vapour pressures compiled by Regnault. (b) *Humidity in the atmosphere.*—Air contains a proportion of water vapour which varies considerably from place to place and time to time. The ratio of the mass of water vapour to the mass of dry air is called the mixing ratio, if, at the same temp., the water vapour were saturated in the presence of a plane water surface this would be called the saturation mixing ratio with respect to water. The percentage ratio of the density of the water vapour actually in the air to the density of the saturated water vapour at the same temp. is defined as the relative humidity. This is approximately the same as the percentage ratio of the mixing ratios and almost identical with that of the vapour pressure to the saturated vapour pressure. Given the temp. of the air, then either of the quantities, mixing ratio or relative humidity, will determine the amount of water vapour in the atmosphere. If the air is cooled a temp. will be reached at which the saturation vapour pressure is the same as the vapour pressure of the air, condensation will then take place. This temp. is called the dew-point, and it is also a measure of the humidity of the atmosphere. Most H<sub>2</sub> measure one of these three quantities. The absolute quantity of aqueous vapour in the air does not determine its dampness, but merely the proximity to saturation. For example, suppose that, on a summer's day, the temp. is 21° C., and that the pressure of the aqueous vapour is 15 mls., the air would feel dry because the saturation pressure at 25° C. is 31.7 mls. On the other hand suppose that, on a cold winter's day when the temp. is 1° C., the aqueous vapour pressure is 3.3 mls., the air would feel very damp because the saturation pressure is 8.7 mls. at 1° C. The mixing ratio in the former case is low, in the latter case high.

The hair hygrometer depends on the fact that the human hair expands with increasing relative humidity, the instrument is not very accurate and has to be calibrated, but it is used almost universally for autographic records. The expansion in length is magnified by a simple

lever mechanism. Hair is also subject to a temp. effect, and it is therefore being replaced by gold beater's skin, particularly in Brit. radio-sondes (see RADIO-SONDE). These H<sub>2</sub> have an additional disadvantage in that they have a slow response or 'lag,' which becomes greater at the very cold temps. experienced at high levels.

*Dew-point Hygrometers.* If an atmosphere containing aqueous vapour is gradually cooled, a temp. will be reached at which the vapour will condense. This temp. is called the dew point. At this temp. the quantity of vapour in the air is just sufficient to saturate it. In an unconfined atmosphere the pressure of the vapour will not change during the cooling, hence the actual pressure of the vapour in the air is equal to the maximum vapour pressure at the temp. of the dew point. If, therefore, the dew point is determined, the maximum vapour pressure for this temp. is found from the tables of vapour pressures, and this is the actual pressure of the vapour in the air.

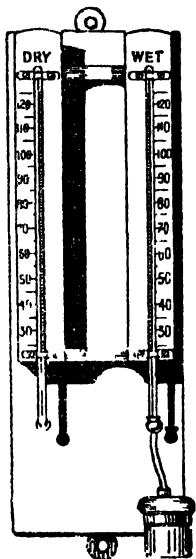
*Regnault's Hygrometer.* In this instrument air is aspirated through ether contained in a silver thimble which closes the lower end of a glass tube. Cooling is produced by the evaporation of the ether, when the temp. of the silver surface reaches the dew point, the polish of the surface becomes dimmed owing to the deposition of moisture. The temp. at which this happens is read on a thermometer. The moment at which the dew appears on the thimble attached to the tube can be ascertained with great delicacy by comparing its surface with that of the surface of a similar thimble attached to the upper end of the glass tube which contains nothing but air.

*Dobson-Brewer frost point hygrometer.*—This instrument was invented during the 1919-20 war by Dr G. M. B. Dobson and A. W. Brewer. It works on a similar principle to Regnault's hygrometer but is faster in operation and more suitably adapted for use in an aircraft and with very low temps. In its modern form the cooling fluid (liquid air) is pumped into a black thimble, a jet of air from outside the aircraft is directed on to the thimble and watched by a photo electric cell. When the current from the photo electric cell is constant the deposition of frost on the thimble is balanced by the rate of evaporation and the temp. of the thimble is then the frost point of the air. With this instrument were made the first accurate measurements of humidity in the high atmosphere, and in 1913 Brewer found the stratosphere to have a very low relative humidity.

*Wet- and Dry bulb Hygrometer.*—This instrument, which is also known as a psychrometer, is used at most observing stations throughout the world, consists of two delicate thermometers attached to a wooden stand (see Fig.). One of the bulbs is covered with muslin and is kept moist by being connected with a reservoir of water by means of cotton wick. Evaporation takes place more or less rapidly from the wet muslin, and the bulb of the thermometer which it covers



is more or less cooled according to the hygrometric state of the air. If the air is quite saturated no evaporation will take place, and the temp. of the wet bulb is the same as that of the dry bulb. The drier the atmosphere the greater will be the difference in temp. between the two



WET- AND DRY-BULB HYGROMETER

bulbs. The formula connecting the vapour pressure, dry and wet-bulb temps was first suggested by E. F. August in 1825 and was modified by Regnault in 1845. Tables based on Regnault's formula were brought into use in England in 1926, replacing Glaisher's empirical tables. Assmann found that the wind speed past the thermometer bulbs was important, and he devised an instrument, the 'Assmann psychrometer,' which sucked air mechanically at a known rate over the bulbs; he produced tables for use with his instrument and for other conditions. A sling psychrometer is used in the U.S.A. and tables very similar to Assmann's are used with it. At Washington, in 1917, the Conference of Directors of the International Meteorological Organisation recommended the adoption of the new Goff-Gratch tables of saturation vapour pressure over pure liquid water; these have been used in calculating new humidity tables for aircraft observations. See *Hygrometric Tables*, 4th ed. H.M. Stationery Office (reprinted 1949). Meteorological Office Discussion: 'The measurement of humidity,' *Met. Mag.* (London), 78, 1949, p. 169.

**Hygroscope**, instrument used to indicate whether the air is more or less moist. It gives no indication as to the quantity of moisture present. Its action depends on the property which organic substances have of elongating when moist and contracting as they dry. On one of the most common forms, a male and female figure are so suspended (by catgut) with reference to the doors of a toyhouse that when the air is moist the man comes out of one door while the woman goes in at the other, the converse taking place when it is dry. As these figs. only indicate the humidity of the atmosphere they are moved by a weather change and are therefore usually belandhand with the state of the weather.

**Hyksos**, or 'shepherd kings,' a people from the E. who conquered Egypt 'with out a battle,' destroyed her cities and temples, and reduced the inhabitants to slavery. Manetho and other authorities on the hist. of Egypt place the arrival of the H. at the end of the twelfth dynasty, and their expulsion at the beginning of the eighteenth dynasty. The Egyptians were not by nature warlike; they were lovers of home and of peace; necessity at times drove them to extremes, but the whole nature of the country was 'to live and let live.' This lack of military spirit must have caused the yoke of the barbarian to be very heavy; it had, however, the desired effect upon the country. At the final expulsion of the H., when the Egyptians at last rose and learnt to combine, their fate was vile enough for the barbarian, and no Egyptian who was able to bear arms refused to enlist. Of the many theories concerning the H., one assumes that, after the downfall of the thirteenth dynasty, a confederation of Semitic tribes from the E. Syrian desert migrated into the Delta during the internal trouble of the country, combined, and then assumed the mastery of Lower Egypt. It is a more attractive theory to believe they were non-Semitic, and may have been related to, or formed part of, the Kheta or Hittite people (*q.v.*). These H., having estab. themselves, elected a king called Salatis, who reigned at Memphis and made all Egypt tribut. to him. The great fortress at Avaris in the Sethroite nome or dist., E. of Bubastis and close to Tanis, became their stronghold. Josephus gives us a few names of the H. kings, such as Salatis, Beon, who succeeded him, Apicinas, Apophis, Jonias, and Assi. Another king, Apopi, or Apope I., whose name is inscribed on a granite slab at the temple of Bubastis, appears to have tried to suppress the worship of the auct. gods of Egypt and struggled to force the country to pay homage to Set (the wicked one). A king Khyan, whose headless statue was found at Bubastis, seems to have spread his authority widely, and been either known or recognised as far as Bagdad, and also at Cnossus in Crete, where his name occurs on the 1 of a jar. The scarabs of the H. have been found chiefly at Tell-el-Yehudiyeh. Their rule in Egypt may have lasted 500 years, or, as other authorities say, 100 years. Correct dates are still impossible to obtain. See R. M. Engberg,

*The Hyksos Reconsidered* (Or. Inst. Univ. Chicago Studies 18), Chicago, 1939.

**Hylas**, in Gk. mythology, a youth who was a favourite of Alkaios (Hercules), and who was abducted by the Naiads, who fell in love with him while he was drawing water from a fountain in Mysia.

**Hylobates**, name of a genus of mammals, belonging to the Primates, family Anthropomorphidae or Simiidae, and commonly known as the gibbons. *H. syndactylus*, the siamang, is the best-known species.

**Hylomorphism**, see under STOICISM.

**Hylton**, or **Hilton**, vil. in the co. of Durham, Eng. It stands on the R. Wear, about 3 m. W. of Sunderland, and the people are engaged in shipbuilding and the manuf. of iron goods. Pop. 3000.

**Hymans**, Paul (1865-1911), Belgian Liberal statesman and diplomat, b. at Ixelles. Called to the Bar, 1885. Prof. of comparative parl. hist. in Brussels Univ., 1898-1914. Elected to legislative chamber for Brussels, 1900. In 1914, after Ger. invasion of Belgium he went to America on a mission to President Wilson. Belgian minister in London, 1915-17. Minister of economic affairs, 1917. Minister of foreign affairs: 1918-20, 1921-25, 1927-34, and 1934-35. Attended Council at Versailles, 1918. Represented Belgium at Peace Conference, 1919. Presided, 1920, at the first Assembly of the League of Nations. Belgian delegate to Disarmament Conference, 1932. Member of the Council of ministers, 1935-36.

**Hymen**, in Gk. mythology, the god of marriage, though originally the marriage song. He is generally supposed to be the son of Apollo and one of the Muses, and is represented as a beautiful youth carrying a bridal torch.

**Hymenaea**, genus of leguminous plants found in tropical America. There are eight species in all, the commonest being *H. courbaril*, the locust or gum-animo tree. The wood is very heavy and takes a fine polish; the resin known as gum-animo exudes from the stem; the seeds are enveloped in a sweet mealy substance eaten by the Indians.

**Hymenoptera**, name given to a large order of Insecta which includes the bees, ants, wasps, etc.; its members are characterised by four membranous wings with few veins, well-developed mandibles, movable abdomen, bearing in the case of the female an ovipositor which may or may not be retractile; certain families are furnished with a sting, and others with sawing or boring appendages; in the honey-bees, the subordinate mouthparts are produced into a long, tongue-like proboscis, with which the insect extracts honey from flowers. The head is globular in shape, and mobile, with compound eyes and six ocelli on the crown. The larvae are cruciform and have a distinct head. There are over 30,000 species of H., which are grouped into two sub-orders, the *Membrivores* and the *Petiolata*. To the first belong *Tenthredinidae*, the saw-flies; *Siricidae*, the wood-borers, etc. The *Petiolata* comprise the series *Parasitica*, with *Cynipidae*, the gall-wasps;

*Ichneumonidae*, the larva-wasps, etc.; the series *Tubulifera*, consisting of *Chrysididae*, the burnished wasps, and the series *Aculeata*, containing *Apidae*, the bees, *Formicidae*, the ants, and many other important families.

**Hymettus**, auct. mt. range of Attica, Greece, over 3000 ft. high, about 5 m. from Athens, now called Trelo Vuno (Vouni). It has always been famous for its honey. The anets, quarried a much-prized bluish-grey marble.



THE REMAINS OF THE PNYX OR PEOPLE'S ASSEMBLY IN ATHENS, WITH THE ACHOPOLIS ON THE LEFT, AND HYMETTUS RANGE IN THE DISTANCE

**Hymns** (Gk. *hymnoi*). The word was employed among the Gks. to denote songs or poems in honour of gods or of heroes, or composed for some special occasion, and in Greece the number of H. was legion. Hesiod, Homer, Pindar, Euripides, all make use of the term and testify to the frequency with which the compositions are used. Oldest among these are the Homeric H., a series of brief addresses to the gods. Among the latest pagan Gk. productions are the Orphic H., which deal with the rites of initiation into the Hellenic mysteries. In considering the question of hymnology from a Christian point of view, however, the early Heb. poetry is especially valuable. It shows, indeed, the greatest heights to which religious poetry had risen before the beginning of the Christian era. The unique position which the Davidic psalter has ever held in the worship of Christendom shows the recognition of this fact by all nations. The last great burst of Heb. hymnody is closely connected with the Incarnation, and as such has always held a high place in the services of the church. For centuries the song of Zacharias (Luke i. 68-79), 'Blessed be the Lord God of Israel,' and the song of the Blessed Virgin Mary

(Luke i. 46-55), 'My soul doth magnify the Lord,' have been used daily in the choir offices.

As we consider the question of Christian hymnody, it will be well to begin with a definition, that of St. Augustine of Hippo: A H. 'is singing with the praise of God. If you praise God and do not sing you utter no hymn. If you sing and praise not God you utter no hymn. If you praise anything which belongs not to the praise of God, though in singing you praise, you utter no hymn.' This definition gives the distinction characteristic to the H. which belong to the four centuries preceding it.

*Eastern Hymnody.* The preface to the hymnary of the Mozarabic Breviary tells us that as Christianity itself came from the E., so also did the custom of hymn-singing. The words of Pliny, in the famous letter to Trajan (c. A.D. 110), carry us further than this by showing at how early a date the custom was estab. in Bithynia. Early Gk. H. must be divided into two classes, the first consisting of those written in the rapidly dying classical metres, the second, and more important, of H. written in a more Oriental and often Hebraic type. To the first class belongs the oldest of all Christian H., the *Στοιμαὶ παλαιοὶ ἀδωναι*, ascribed to Clement of Alexandria. This H. is simple and child-like, containing nothing but what could be found in the pages of Scripture. A higher mystical level is shown in the H. of St. Gregory of Nazianzus (also classical in form) in the fourth century, dealing chiefly with the doctrines of the sacramental symbol and the contemplation of the Most Holy Trinity. Trans. of all may be found in A. W. Chatfield's *Songs and Hymns of the Earliest Greek Christian Poets* (1876). To the same school belong Synesius (375-430), Sophronius, and St. John of Damascus. Of all their works only three canons by St. John of Damascus have received a place in the Gk. service-books. The later Gk. H. are to be found chiefly in the various church service books, viz. the twelve vols. of the *Menaia*, giving the Prayer of Saints; the *Greater Octoechus* or *Paracleticus*, containing the Ferial office; the *Lesser Octoechus*, containing the ordinary Sunday services; the *Triodion* (Lenten season); the *Pentecostarion* (*Charnosynon* (Easter and Pentecost); the *Euchologion*, containing the occasional offices; and the *Horologion* or *Hours of Prayer*. These books contain a vast number of H. of which the best selection is to be found in Christ and Parankas's *Anthologia Græca*, etc. They are best known in England by the trans. of J. M. Neale, of which mention may be made of 'Christian, dost thou see them?' (St. Andrew of Crete, 680 c. 732), 'Tis the day of Resurrection' (St. John Damascene), 'Jesus, Lord of life eternal' (Joseph the Hymnographer), 'Jesus, Name all names above' (Theoclitus of the Studium). But numbers may be found in any modern hymnal.

*Syriac.* From the second century until almost the close of the Middle Ages, the churches of Syria, Mesopotamia, and W. Persia produced many excellent H.,

which are, unfortunately, almost unknown in the W. The names of Harsaenus (Bar-Halsan, b. 154), and Ephraem Syrus (d. 378) must be mentioned. The H. of this writer still hold an important position in the service books of the Syriac churches.

*Latin Hymnology* cannot be traced further back than the beginning of the fourth century, the earliest name with which any H. can be connected being that of Hilary of Poitiers, of whom Isidore of Seville says that 'he was the first who flourished in composing hymns in verse.' Sev. H. in the Mozarabic Breviary are ascribed to him. Contemporary with Hilary was Pope Damasus, to whom two extant H. are ascribed, but the real founder of Lat. hymnody comes somewhat later. This title is unanimously given to St. Ambrose (d. 397), to whom a large number of extant H. is attributed. The twelve which the Benedictine editors give as genuine include some of the best known office H. Among them are *Æterna Christi munera* (The eternal gifts of Christ the King), for apostles and evangelists; *O Lux beata Trinitas* (O Trinity of blessed light), Saturdays in Trinity tide; and *Splendor Paternæ gloriæ* (O splendour of God's glory bright), Mondays from Epiphany to Lent. From the fourth to the eleventh century we have a regular stream of religious poets and hymn-writers, mostly of considerable merit. At the end of the fourth century comes Aurelius Clemens Prudentius, a Spaniard, from whose poems many of the Ferial H. (e.g. 'Lux ecce surgit aurea') were taken. But his best-known H. is that for the Nativity, 'Corde natu ex parentis' (Of the Father's love begotten). In the fifth century we have the layman Sedulius, the author of the well-known Christmas H., found in almost all the breviaries. 'A solis ortus cardine' (From east to west, from shore to shore). The latter part of this, 'Hosti- Herodes imple' (Why, iniquitous Herod, should'st thou fear?), forms the office H. for the Epiphany. Venantius Fortunatus, bishop of Poitiers (d. c. 609), is far better known. To him belongs the glorious *Pascentide* H., 'Vexilla Regis prodeunt' (The Royal banners forward go), and 'Pange lingua gloriosi' (Sing, my tongue, the glorious battle), both of which occur in the Rom. Breviary, but in a mutilated form. St. Gregory the Great, from whom the Gregorian melody takes its name, wrote much, but is less known. Some twelve H. are attributed to the one Eng. Father, the Venerable Bede (673-735). In the next century Fulbert of Chartres wrote the triumphal Easter H., 'Chorus novæ Hierusalem' (Ye choirs of New Jerusalem). From the eighth century dates also the 'Urbs beata Hierusalem,' which became the H. throughout Europe for the dedication of a church. This period closes with the mention of St. Bernard of Clairvaux, the representative of the later mystic school, whose 'Jesu dulcis memoria' (Jesus, the very thought of Thee) is known to all. By the end of the eleventh century the liturgical use of H. was well estab. throughout W. Christendom, and

such H. found a place in all service books. The next few centuries are important for the spread of the Sequence, a H. sung before the Gospel at Mass, which was developed from the *Allicula* by Notker of St. Gall (d. 912). The greatest of the medieval sequences, however, is the 'Dies ira, dies illa' (Day of wrath, O day of mourning), the authorship of which is ascribed to Thomas of Celano, the friend of St. Francis of Assisi.

**English Hymnody.**—It would be possible to trace the beginnings of Eng. hymnody to the time of Caedmon (seventh century), but this would lead us by too long a path. It will be well to take the hist. up at the Reformation. When the trans. and adaptations of the old service books were made for the new Book of Common Prayer, it was Cranmer's intention that the old H. should be trans. likewise. But he had not himself the poetic ability for this task, and the work remained undone until the nineteenth century, when sev. trans. of the whole body of the anc. Sarum H. were made. During the two centuries that followed the beginnings of the Reformation there was no book of H. for use in the Eng. Church. In the Prayer Book itself there was but one trans., that of the 'Veni, Creator' in the Ordinal. Their place was taken, however, to some extent by the metrical paraphrases of the Psalms. 'Til almost the end of the seventeenth century the most popular was the version by Sternhold and Hopkins, commonly known as the 'Old Version.' This later gave way to the 'New Version' of Tate and Brady. Sev. from this latter work still find their place in hymnals, such as, for example, the H. 'As pants the hart for cooling streams.' In 1623 appeared George Withers's *Hymns and Songs of the Church*, the first attempt at a comprehensive hymn-book, but it never secured any measure of success. Many excellent H. were written also by Bishops Taylor and Ken. But the first hymn-book definitely designed for use with the service of the Church of England appeared in 1737, with the title *Collection of Psalms and Hymns*. It was compiled by John Wesley, chiefly from the writings of Isaac Watts, and pub. at Charleston in Georgia. Two years later came the official foundation of Methodism, and all later eds. of the book must be classed as Methodist. The next step was taken by M. Madan, who in 1769 pub. *A Collection of Psalms and Hymns extracted from various Authors*, etc., containing 170 H. It is noteworthy that during the rest of the century all the church hymn-books that appeared were built on the foundation of the various Nonconformist collections, and that no great hymn writer arose within the church until the production of the *Olney Hymns* by Newton and Cowper. At the beginning of the nineteenth century there was a great outburst of hymn-writing and collecting, which had seen considerable advance even during the first twenty years. The productions of this period are characterised by a striving for uniformity and harmony with the Book of

Common Prayer, and by a desire to secure official recognition which presages the later general return to the old Gk. and Lat. H. and their trans. Meanwhile, the thirty years which bring us to the middle of the century saw an even greater increase in the number of hymn-books produced. Seventy-four of these are quoted in Julian's *Dictionary*, and these are but a selection of the most important. Bishop Heber's *Hymns* (1827), containing the hymns of H. H. Milman, was an extremely influential collection, and E. Bickersteth's *Christian Psalmody* (1833) was also important. This last was supplanted by the *Hymnal Companion* by the Rev. E. H. Bickersteth, son of the above-named. The influx of these H., more definite in doctrine and more robust in style, led to a gradual exclusion of the Nonconformist and Calvinistic element which had hitherto bulked so large. Moreover, the standard of religious poetry had been raised considerably by the influence of Keble's *Christian Year*. The *Hymnal* *Noted* of 1852 and 1854 confined itself entirely to Lat. hymns, their excellence being enhanced by the beauty of Neale's trans. But the hundreds of hymnals which had now issued from the press had left Eng. hymnody in great confusion, and this resulted in the pub. of *Hymns* (later *Hymns Ancient and Modern*), 1861, a collection which at first contained only 130 H., but which rapidly increased in size and in popularity until it almost entirely supplanted all other collections. At the beginning of the twentieth century sev. new hymn-books, all aiming at a higher level of scholarship, were produced. The most important of these are the *English Hymnal* (1906) and the *Oxford Hymnal* (1908).

**Nonconformist Hymnody.**—The Baptists long resisted the practice of singing H. Their first hymn-writer was B. Kirch, about 1673. The names of J. Stennett (1663-1713), S. Stennett, grandson of the former (1728-95), and W. Noel (1799-1873) are also worthy of mention. Both the Particular Baptists and the General Baptists now have official hymn-books. The Congregationalists have produced many hymn-writers of great merit, (greatest of these is Isaac Watts (1674-1748). The names of Philip Doddridge and Josiah Conder are also well known. In 1859 was pub. officially the *New Congregational Hymn Book*. Since that date, however, sev. other Congregational hymnals have been issued. The greatest hymn-writer of Methodism is Charles Wesley, to whom sev. thousand H. of varying merit are ascribed. Many of them are among the most popular of H., both in the Church of England and among the various Methodist bodies.

Mention may now be made of the H. known as carols. The word was originally applied not to a song, but to a dance. The song was later added, and the name included both. Finally the dance was dropped, and the song retained the name. Carols, secular and religious, both in the vernacular, were very popular during the Middle Ages, being sung at festivals both

in and out of church. Their hist. is especially connected with the miracle and mystery plays. Odd scraps of Lat. which seemed to link these popular songs to the liturgical service of the church are frequently found in them. From the Reformation to the nineteenth century we have almost an entire blank in the hist. of the carol. Then collections of modernised versions of the old carols were made and new ones were written. To this period belongs *Good King Wenceslas*, by J. M. Neale. The most popular collections are those by Choape and Woodward. See J. Julian, *Dictionary of Hymnology*, 1892 (last ed., 1907), to which this article is much indebted; J. M. Neale *Hymns of the Eastern Church*, 1863; J. Pauly, *Hymni Breviarii Romani*, 1868-70; C. A. G. Chevallier, *Poésie liturgique du moyen-âge*, 1893; Norman, *Hymnarium Salutarissime*, 1851, and H. A. Daniel, *Theatrum Hymnologium*, 1853, with J. M. Neale's dissertation: Hastings, *Encyclopædia of Religion and Ethics* (1911), vol. 7; F. J. Gillman, *The Story of Our Hymns*, 1921; W. Procter, *The Story of Sacred Song*, 1925; N. Mable, *Popular Hymns and their Writers*, 1918.

Hyndman, Henry "Ayers" (1842-1921), Eng. socialist leader; b. in London; eldest son of John Beckles H., barrister. Educated privately, and graduated at Trinity College, Cambridge. He travelled widely and occupied himself with journalistic work. In 1881 he founded the Social Democratic Federation. He was always an active agitator for social remedies, and in 1887 was tried with John Burns and others at the Old Bailey in connection with W. End riots, but acquitted. In 1911 the Social Democratic Federation was merged in the Brit. Socialist Party, with H. as chairman. This new party split into fragments during the First World War—most members joining the Communists; and in 1920, under H.'s auspices, the S.D.F. was revived. Amongst his numerous publs. are: *Indian Policy and English Justice* (1874), *England for All* (1881), *Historical Basis of Socialism in England* (1883), *Socialism and Slavery* (a reply to Herbert Spencer, 1888), *The Economics of Socialism* (1896). See R. T. Hyndman, *The Last Years of Henry Mayers Hyndman*, 1923.

Hyne, Charles John Cutcliffe Wright (1866-1941), Eng. novelist and traveller, b. at Billbury, Gloucestershire, son of Rev. Charles Wright Noble H. Educated at Bradford Grammar School and Cambridge. Travelled widely in search of literary material. His most popular story is *Adventures of Captain Kettle* (1898), which appeared in the *Illustrated Magazine*. Other stories include *The Lost Continent* (1900), *Mr. Horrocks, Purser* (1902), *Thompson's Progress* (1902), *Red Herrings* (1918), *People and Places* (1930), *My Joyful Life* (1935), *Steamboatmen* (1942) and various sequels to the *Adventures of Captain Kettle* which continued until 1938.

Hyoid Bone, U-shaped bone lying immediately above the thyroid cartilage of the larynx, and near the root of the

tongue, to the muscles of which it gives attachment. It consists of a more or less rectangular body (*basihyal*), and two pairs of unequal *cornua* or horns; the greater curve upwards and backwards; the smaller, about  $\frac{1}{2}$  in. in length, are attached to the basihyal near its junctions with the great *cornua*.

Hyosine, or Scopolamine, important alkaloid of the formula  $C_{17}H_{21}O_3N$ . It is used in medicine, in combination with morphine (*q.v.*), to produce narcosis and 'twilight sleep.' Hyosine was discovered by Schmidt in 1888; it is alternatively known as scopolamine, and occurs in the plants *Hyoscyamus niger*, *Datura stramonium* and *Scopolia carniolica*, etc.

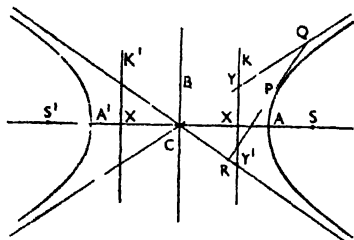
Hyoscyamine, poisonous crystalline alkaloid, obtained from henbane (*q.v.*). When moist, it has a stupefying odour; it is used as a sedative and as a mydriatic. It is found occurring with hyosine, is an alkaloid  $C_{17}H_{21}O_3N$ . It is an optically active form of atropine, and has a mydriatic action on the pupil of the eye.

Hypatia (c. 370-415), female philosopher and mathematician, daughter of Theon, b. in Alexandria. She lectured for a time in her native city, and then became the head of the Neoplatonic school there. Her deep erudition, sound judgment, and fine elocution gained for her the admiration of all her hearers, and her house became the resort of men of learning and distinction in Alexandria—amongst others, Orestes, the prefect of the city, with whom she was accused of being too intimate, and was barbarously put to death by a mob of savage Nitrian monks. For the little authentic knowledge about H., see *Socrates, Hist. ecclesiastica*, vii. 15. See also G. Kingsley, *Hypatia* (novel), 1853; R. Assmus, *Hypatia in Tradition and Dichtung*, 1907.

Hyperæsthesia, excessive sensibility of the nervous system, due to diseased conditions; it is particularly characteristic of hysteria. The sensory nerves are extremely sensitive to the slightest impressions, and may react without the presence of any external stimulus at all. It is sometimes induced by rheumatism, scintia, or any acute nervous complaint. The treatment involves removal of the cause; local applications of heat, cold, or electricity often afford temporary relief.

Hyperbola, plane figure obtained by cutting a right circular cone by a plane inclined to the horizon at an angle greater than that of a generating line (see *GEOMETRY*). Hence it is known as a conic section. It is a symmetrical figure of two branches, each extending to infinity. Any point on a H. is such that its distance from a fixed point, known as the *focus*, always bears a constant ratio to its distance from a fixed straight line called the *directrix*; and this ratio, which is greater than unity, is called the *eccentricity* of the H. A second focus and directrix also exist, for which the same property is true. In the figure S, S' are the foci, KX and K'X' the directrices. SS' is the transverse axis, and CB the conjugate axis. C, the middle point of

$SS'$ , is the centre, and  $A, A'$  are the vertices. The straight lines  $CY, CY'$  through the centre, known as *asymptotes*, gradually approach the curve, but actually only meet it at points infinitely distant. If the tangent at any point  $P$



HYPERBOLA

on the curve cut the asymptotes in  $Q$  and  $R$ , the area of the triangle  $CQR$  is the same for all positions of  $P$ . An  $H$  is thus sometimes defined as the envelope of the line which forms with two given straight lines a triangle of constant area. In analytical conics the equation of an  $H$  referred to its axes is  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ , and

referred to its asymptotes is  $xy = c^2$ . When the asymptotes are at right angles to one another, the  $H$  is called *rectangular*.

**Hyperbole** (*hyperbole* over-shooting, excess) figure of rhetoric which lies without deceiving. It consists of exaggerated and extravagant statements used through excitement or to express strong feeling and arrest the attention and not intended to be taken literally. Formal compliments are often  $H$ s. They form the basis of many metaphors and occur frequently in high-flown or poetic language. The exact opposite is *litotes*, or *Meiosis*.

**Hyperbolic Function**: name given to a set of six functions which are closely connected with the six trigonometrical ratios. The hyperbolic sine is written  $\sinh$ , and may be defined by  $\sinh \theta = \frac{e^\theta - e^{-\theta}}{2}$ .

Similarly the hyperbolic cosine is given by  $\cosh \theta = \frac{e^\theta + e^{-\theta}}{2}$ . The remaining four are obtained from the equations  $\tanh \theta = \frac{\sinh \theta}{\cosh \theta}$ ,  $\coth \theta = \frac{\cosh \theta}{\sinh \theta}$ ,  $\operatorname{sech} \theta = \frac{1}{\cosh \theta}$ , and  $\operatorname{cosech} \theta = \frac{1}{\sinh \theta}$ . Since  $\sin \theta = \frac{e^{i\theta} - e^{-i\theta}}{2i}$  and  $\cos \theta = \frac{e^{i\theta} + e^{-i\theta}}{2}$ , where

$i = \sqrt{-1}$ ,  $\sin i\theta = \frac{e^{-\theta} - e^\theta}{2} = -\sinh \theta$ ,  $\cos i\theta = \frac{e^{-\theta} + e^\theta}{2} = \cosh \theta$ , and  $\operatorname{adv} \cosh \theta = \frac{e^\theta + e^{-\theta}}{2} = \cosh \theta$ , and are the connection with the trigonometrical ratios may be established. A series of

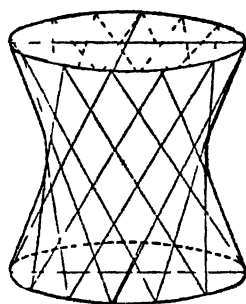
formulae parallel with the ordinary trigonometrical formulae can be deduced, e.g. —

$$\begin{aligned} \cosh^2 \theta - \sinh^2 \theta &= 1 \\ \sinh(\theta \pm \phi) &= \sinh \theta \cosh \phi \pm \cosh \theta \sinh \phi \\ \sinh 2\theta &= 2 \sinh \theta \cosh \theta, \cosh 2\theta = \cosh^2 \theta + \sinh^2 \theta, \text{ etc.} \end{aligned}$$

**Hyperboloid**, name given in solid geometry to two surfaces belonging to the general class of conoids which in three-dimensional analytical geometry are represented by equations of the second degree in  $x, y$  and  $z$ . The two forms of  $H$ s are known as the  $H$  of one sheet (shown in the figure) and the  $H$  of two sheets. The simplest forms of their

$$\begin{aligned} \text{equations are respectively } \frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} \\ = 1 \text{ and } \frac{x^2}{a^2} - \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1. \text{ Both may be} \end{aligned}$$

generated by a variable ellipse moving parallel to itself, and both are intersected by three mutually perpendicular planes in two hyperbolas and one ellipse. The  $H$  of two sheets is formed by two distinct surfaces extending to infinity, and each is touched at infinity by an asymptotic cone, in the same way as the hyperbola has two branches and a pair of



asymptotes. The  $H$  of one sheet is a ruled surface, and is such that through every point of it two straight lines, called generators, may be drawn so as to lie wholly on the surface. It may also be defined as the locus of the intersection of corresponding planes of two homographic pencils of planes.

**Hyperborean Mountains**, see URAL MOUNTAINS.

**Hyperborei** (Gk *ὑπερβόρειοι*, Hyperboreans, 'beyond the North wind'), a mythical race supposed by the Greeks to dwell in the far N. They enjoyed perpetual youth and lived in constant sunshine and unclouded happiness. The Rhiparian Mts separated them from the rest of the world. The name was transferred to any people who lived far N. See Pindar, *Pylæ* x 502, Herod. iv, O. Crusius, 'Hyperboreer' in W Roscher's *Lexikon*, 1884-97.

**Hyperchlorhydria**, see DYSPEPSIA.

**Hyperides**, or **Hypereides** (c. 395-322 B.C.), Athenian orator, one of the ten of the Alexandrian canon, ranking next to Demosthenes. After studying under Plato and Isocrates, he became an advocate at Athens. He warmly supported the Athenian opposition to Macedon headed by Demosthenes and Lycurgus, and was a staunch friend of the former until they fell out over the case of Alexander's absconding treasurer, Halpalus. In the Lamian War that followed, he shared in the defeat at Crannon (322), and was captured and killed by Antipater at Aegina. His writings are witty, graceful, and ironical, the best known being the funeral oration over the dead in the Lamian War. See eds. of speeches and fragments by C. Babington, 1813, and F. Blass, 1894; Sir F. Kenyon (ed.) *Against Athenogenes*, and *Against Philipides*, 1893 and Oxford Text, 1907; also Sir R. Jebb, *Athenian Orators*, II, 1850.

**Hyperion**, in Greek mythology, a Titan son of Uranus and Gaea (Heaven and Earth), father of Helios (Sun) and Eos (Dawn), and patronymic for the sun god himself, and hence the attribute of beauty is connected with the name. See the novel by Holderlin, 1797-99 and the epic by Keats.

**Hyperite**, name which has been given at various times to different rocks allied to diabase and diorite and containing plagioclase, iron ore, biotite, hypersthene, etc. It is especially abundant in the Rocky Mts. the Andes, Japan, Java, and the Philippines, and may be observed in the volcanoes of Hungary and the old volcanic systems of the Lake District, N. Wales, the Oghills, etc. whilst it issues from the more or less active volcanoes of La Soufrière of St. Vincent, Krakatoa, and Pele in Martinique.

**Hypermetropia**, condition of long sight caused when the cornea is too flattened or the eyeball too short, as a result rays of light, instead of converging to a focus on the retina, are brought to a focus behind the membrane. It is corrected by the use of spectacles with convex lenses.

**Hypermetra**, in Greek mythology, one of the daughters of Danus and wife of Lynceus, alone of the daughters of Danus who spared her husband.

**Hypersthene** rock forming mineral consisting of silicates of iron and magnesium, formula  $(Fe, Mg)_2Si_2O_6$ . It belongs to the pyroxene group of metasilicates, and differs from the other members of the orthorhombic series of pyroxenes in possessing more iron.

**Hyperpyrexia**, see under FEVER.

**Hyperstheneite**, rock whose chief constituent is hypersthene (*q.v.*). It is a member of the pyroxene group and different species are named according to the other minerals present. It is of igneous origin and occurs in great abundance in the N. of Scotland, New Zealand, Saxony, E. America, and elsewhere.

**Hyperthyroidism**, a condition of the body caused by excessive activity of the thyroid gland. In certain districts, such as the Alpine regions of France, an en-

largement of the gland is liable to occur, progressing to the formation of a large tumour or goitre, which may hang down as far as the breast but the secretion, thyroxin, of the gland is deficient, owing to a shortage of iodine (an essential constituent of thyroxin) in drinking water. A variety known as exophthalmic goitre, from a protrusion of the eyeballs which is characteristic of the disease, appears to be associated with increased activity of the thyroid gland. The symptoms, which include palpitation of the heart, raised basal metabolic rate, and excessive nervous irritability, are similar to those produced by an overdose of thyroid extract, and the treatment of the disease includes partial removal of the thyroid gland (thyroidectomy) by surgical means, or the use of antithyroid drugs such as thiouracil. The opposite condition, hypothyroidism or underactivity of the thyroid, causes cretinism in infants and myxoedema in adults. See further under GOITRE.

**Hypertrophy**, abnormal growth of an organ or tissue, generally due to increased nutrition, e.g. well developed muscle. Protective hypertrophy occurs in the formation of a callus or hard covering, or in the case of local super-development of tissue in the neighbourhood of an embedded bullet or tumour. *H.* of the heart (*q.v.*) occurs as the result of the heart's effort to increase its efficiency which has been otherwise impaired, frequently a diseased condition of one organ causes *H.* in another, as in the case of disease of one kidney. The condition may be either congenital or acquired, and may be accompanied by an increase in the number of constituents of any particular tissue (hyperplasia), and it may occur without any increase in bulk of the complete organ. Other examples of *H.* are obesity, goitre (see HYPERTHYROIDISM), elephantiasis. See also ATROPHY.

**Hypnerotomachia**, fantastic work probably written by Francesco Colonna (c. 1441-1527) under the pseudonym 'Poliphilus' (Venice, 1499) in 'Italo-Carome' but produced later by the Aldine Press. It contains fables, architectural and historical antiquities and touches that all human passions are our dreams. See ed. 1545 Eng. trans. 1912, A. Lang, ed. (reproduction in the unit) 1901.

**Hypnone**, hypnotic or soporific drug known in chemistry as acetophenone. Its formula is  $CH_3COCH_3$ . It is a colourless crystalline solid m.p. 20° C. It is made by the action of acetyl chloride upon benzene in the presence of anhydrous aluminium chloride.

**Hypnoanalysis**, see HYPNOTISM, Uses.

**Hypnos**, see SLEEP.

**Hypnotics** are used to induce sleep by lowering the excitability of the nervous system, or by producing temporary anaemia of the brain, the latter being induced in natural sleep. Thus warmth applied to the feet, a warm bath, a full meal, or various drugs, by diverting the blood from the brain, act as *H.* Drugs which dull the brain cells are known as narcotics (*q.v.*), and neither *H.* nor narcotic drugs should be used except on medical advice.

**Hypnotism**, condition of artificially induced sleep, or trance resembling sleep, in which a patient is rendered more susceptible to suggestion. It includes the series of phenomena which from time to time have been termed animal magnetism, mesmerism, induced somnambulism, *odyllo force*, etc.

**History.** From time immemorial forms of H. appear to have been known, e.g. certain states of ecstasy which are more or less self-induced in types of fanatics are related to H., and while affected, the individuals appear capable of resisting what would be pain and fatigue under normal circumstances. Definite investigations of the state have been made since the sixteenth century: Paracelsus at the end of that century estab. to his own satisfaction the existence of a sympathetic system between the human and the stars and other objects. Gassner, a Rom. Catholic priest of Swabia, in the middle of the eighteenth century stated that disease was due to demoniacal possession, and that a supernatural power with which he claimed to be invested, could be used to expel all forms of disease. In 1774 Mesmer, a Viennese physician, gained a large measure of success in the treatment of certain disorders. He proceeded to Paris in 1778, and by continued successes he gained a large following, and his suggestion of the actual transference of a 'magnetic fluid' continued in vogue until within quite recent times. His treatment necessitated much apparatus, magnets, connecting wires, etc., with usually a central tub of water or other liquid round which the patients were seated. A pupil, Marquis de Puységur, in 1780, proved that the accessory magnets, etc., were unnecessary, and the claims of 'mesmerism' became so insistent that a Fr. commission was appointed in 1785 to investigate the matter fully. Their report was unfavourable, and this, coupled with its later association with the notorious Cagliostro, brought it into disrepute. In 1831 Bertrand estab. the affinity of magnetic sleep to somnambulism, and suggested its use as a therapeutic agency, and a second Fr. commission of that year reported rather more favourably. In 1841 Dr. Braid, a Manchester physician, discovered that a subject could be entranced by gazing at a bright object, and he suggested the name 'hypnotism,' from (Gk. *hypnos*, sleep). On the Continent schools of H. were estab. under the direction of the distinguished physiologist, Richet of France, and such physicians as Charcot (Salpêtrière), Liebhaut, Bernheim, Preyer and Heldenbain. In Britain Dr. Elliotson (editor of *Zoist*) supported H., and his advocacy resulted in his being driven out of the profession. But the discovery of chloroform in 1845 meant the possession of an anaesthetic of wider application and more certain results, and, in consequence, H. tended to become neglected. In 1882 Mr. Gurney carried out investigations in the subject, and the Brit. Medical Association, after a long period of doubt and vacillation, reported favourably on its use in 1892. The

names of Drs. Bramwell and Tuckey are associated with valuable work, and in 1907 the Medical Society for the Study of Suggestive Therapeutics was founded.

**Methods.** The usual methods employed to bring about the hypnotic condition are either (a) peripheral, as in the gazing at a bright object so placed as to cause some slight muscular eye strain, flashing of mirrors, slow, monotonous 'mesmeric' passes, and even the flicking of a watch in very sensitive persons; (b) central stimulations as by verbal suggestions. Frequently there is a combination of these methods (Braid and Bernheim) as when the operator places a bright object slightly above the level of the subject's eye, and suggests to him the idea of sleep, at the same time making hand passes before the face. It is found in practice that about 90 per cent of persons are susceptible to H., and the proportion always appears to be higher in individuals trained to obey, e.g. soldiers, sailors, school children, etc., than in others, though it bears little relation to age, sex, or intelligence. Liebhaut had some 1700 successes in 1756 persons treated. Bramwell had but two failures in his first 500 subjects, and no less than 210 became somnambules. The persons who give exhibitions of H. on the stage are in reality not specially gifted. It is quite possible for a psychiatrist to induce equally profound hypnosis, but lighter stages are more suitable for purposes of healing. Many animals, e.g. cats, dogs, lizards, crocodiles, etc. can be hypnotised.

**Symptoms.** There are three well marked stages of hypnosis: (1), slight, in which the voluntary muscles are affected, without loss of consciousness in the patient and without amnesia on returning to the normal condition; (2), deep, in which the symptoms vary greatly: the sensory system is affected, there may be tonic contractions of the muscles (induced catalepsy of Heldenbain), or marked flexibility; there is frequently an increase of muscular strength, or a maintenance of an awkward attitude without muscular fatigue; there may be paralysis of one side, or one organ, by open or overt suggestion, or suggestion may be used to cause alterations of sensation. Visible symptoms include: change in pulse beat and in rate of respiration, dilated pupils, drooped eyelids, protruding eyeballs, and frequently flushed face and highly increased perspiration. This stage is usually marked by amnesia on waking, though a second hypnotic state will generally contain memories of the first. No satisfactory explanation has been given of post-hypnotic suggestion by which the subject can be made to carry out some action (not foreign to his nature) after the lapse of a given interval, as for example, the hypnotised person may be told to, write his name, note the time, purchase some article, etc., after the expiration of, say, 5000 mins., and although on waking he may have no cognition of the command, yet punctually to time he will endeavour to carry out the suggestion, usually doing



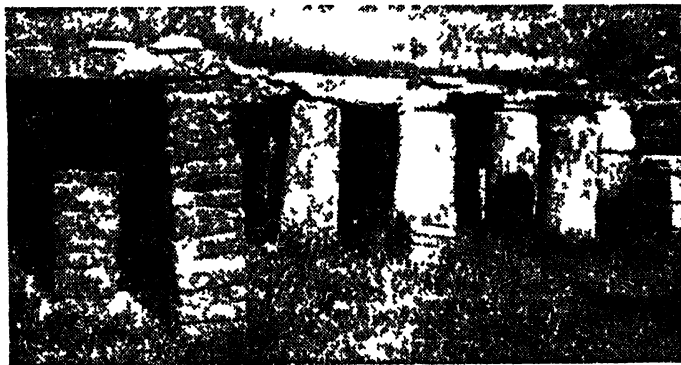
so with some more or less plausible explanation. The third stage is somnambulism, in which the subject rarely makes any response to suggestions. This condition can seldom be reached during the first experiments with a new subject.

*Uses*—Although H is extensively used, yet the treatment does not fulfil all the claims of its early exponents. There is no doubt that it can be made to yield sleep without the use of drugs, which of itself is a valuable property, and during this sleep the subject is peculiarly open to suggestion so that definite advantage follows its use in cases of blindness, loss of speech, hysterical paralysis, etc. Pain can be relieved, *e.g.* during childbirth or surgical operations (*see above*). Its use

hysteria, (4) due to the establishment of a special rapport between hypnotist and subject, and (5) due to the establishment of conditioned reflexes. *See* A. Forel, *Hypnotismus*, 1906; E. L. Ash, *ABC of Medical Hypnosis*, 1931; Brannan and Gill, *Hypnotherapy*, 1914; A. Salter, *What is Hypnosis?* 1914; L. J. Karnosh and E. M. Zucker, *Handbook of Psychiatry*, 1945; Doctor Mesmer, *Mesmerism*, 1918.

*Hypo*, popular name for the chemical substance used in developing photographic negatives, commonly known as hyposulphite of soda, the correct name is thio-sulphate of soda.

*Hypocaust*, arrangement used by the Romans for heating their baths and villas



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#### A HYPOCAUST

has been treated as an educational agent even in the Continent for the reformation of criminals as it has been claimed that considerable improvements have followed its application in dipsomania, morphinomania, etc. It is sometimes possible by H to produce alterations in unconscious attitudes underlying psychological symptoms (with disappearance of the symptoms) and mental analysis may often be expedited by the use of H (Hypnolysis). Exaggerated statements have been circulated as to the extent of control consequent on H and experiments show that it is extremely difficult in many cases impossible to induce an individual to carry out actions which are normally abhorrent to his character, i.e. H cannot make a normal individual carry out a criminal campaign, though an unbalanced or perverted mind may be rendered criminal.

*Theories*—Numerous theories have been advanced but the nature of the H state is still uncertain. It has been considered (amongst other theories) to be (1) an abnormal state of the brain, (2) due to a temporary abolition of some cortical functions, (3) a psychomotoric, allied to

The furnace (hypocaust) was placed below the room to be heated and the H was a low space under the 'caldarium,' where the hot air was accumulated and thence distributed round the walls and to other rooms by means of pipes and passages (see above).

*Hypochlorous Acid* ( $\text{HClO}$ ) is only known in aqueous solution and may be obtained by distilling bleaching powder with dilute nitric acid or by dissolving chlorine monoxide in water. The solution obtained has a peculiar 'chlorous' smell, and strong bleaching properties, the acid being readily resolved into hydrochloric acid and oxygen. Its salts, the chlorites, are almost unknown in the free state, and are obtained, together with the chlorides, when chlorine is passed into a cold solution of the hydroxide of an alkali or alkaline earth. Bleaching powder ( $\text{CaO} \cdot \text{Cl}_2$ ) or 'chloride of lime,' is prepared by passing chlorine over slaked lime, and consists of a mixture of calcium hypochlorite,  $\text{Ca}(\text{OCl})_2 \cdot 4\text{H}_2\text{O}$  with basic calcium chloride,  $\text{CaCl}_2 \cdot \text{Ca}(\text{OH})_2 \cdot \text{H}_2\text{O}$ —roughly equivalent to  $\text{Ca}(\text{OCl})_2$ . It is used in large quantities for bleaching in the textile trade. With small quantities of acid,

H. A. is set free from hypo-chlorites, and with larger quantities chlorine is evolved. *Eau de Javelle*, formerly much used for bleaching, consists of a solution of potassium chloride, KCL, and potassium hypochlorite, KClO.

**Hypochondriasis**, name obtained by its supposed connection with the hypochondriac regions of the abdomen (*q.v.*), a mental illness causing disorder of digestive and biliary, and often other, functions. It is characterised by palpitations, extreme sensibility, morbid feelings that simulate disease, and great uneasiness about the health. In extreme cases it develops into melancholia. It is more frequently met with amongst the rich than the poor, and the best cure consists in physical and mental exercise, and interests outside oneself, or psychiatric treatment in severe cases.

**Hypodermic Injection** (*ὕποδερμα*, under, *δέρμα*, skin), introduction of a drug beneath the skin. It is effected by means of a hypodermic syringe, which is armed with a sharp hollow needle, so that the tissues underlying the skin can be reached without much inconvenience to the patient. The advantages of H. I. are that a drug can be introduced more directly to the tissues than by way of the stomach, the quantity required is therefore less, the treatment can be made local if required, and the operations of a possibly deranged stomach are not further interfered with. The method is used chiefly in connection with the group of drugs known as alkaloids, notably morphine and cocaine.

**Hypogeum**, underground chamber anciently used as a burial place, storage room, or dwelling place. In archaeology the term is restricted to the first of these. Various types are found: dug from the earth; cut from rock, as were the Roman catacombs; or constructed of masonry, as at Mycenae.

**Hyponitrous Acid** ( $H_2N_2O_2$ ), colourless, crystalline substance, soluble in water, readily decomposing (often explosively) into nitrous oxide and water. Its salts, the hyponitrites, are formed by reduction of the nitrites by means of sodium amalgam. The silver salt is a yellow insoluble substance.

**Hypophosphorous Acid** ( $H_3PO_2$ ), colourless crystalline compound, melting point  $27^\circ C.$ , formed by the action of sulphuric acid on the barium salt, which is obtained by boiling phosphorous with a solution of baryta. On heating strongly, H. A. is decomposed into orthophosphoric acid and gaseous phosphoretted hydrogen. It is a powerful reducing agent, precipitating gold, silver, and mercury in the metallic state, and copper in the form of its hydride, from solutions of their salts. The hypophosphites are largely used in medicine as tonics.

**Hypophyll**, see **HRACT**.

**Hypostasis** (*ὑποστάσις*, subsistence), Gk. term meaning substantial existence, much used in the Trinitarian controversies of the fourth and fifth centuries. At first used as equivalent to *ὁusia* (divine essence), its meaning in theology has

changed considerably. It was regarded as synonymous with *ὑπόστασις* or *persona* (person) at the council of Alexandria, A.D. 362, and is used to denote the distinct personal existence of each Person in the Trinity. See G. P. Fisher, *History of Christian Doctrine*, 1896; C. G. Harnack, *The History of Dogma* (iv.), 1898.

**Hyposulphite of soda**, see **HYPO**.

**Hyposulphuric Acid**, obtained by dissolving zinc in a solution of acid sodium sulphite. It is a strong bleaching agent.

**Hypothec**, in Scots law, a security over any part of a debtor's property, the property being allowed to remain in the possession of the debtor; hence distinct from both a mortgage and a pledge. The idea is borrowed directly from civil law (*q.v.*), but in practice Scots law allows of few Hs. Hs. are either implied (legal Hs.) or based upon express contract (conventional Hs.). The latter class is restricted to bottomry (*q.v.*), and respondentia (*q.v.*) bonds. The former includes the Hs. of (a) a landlord over movables (*inrecla et illata*) brought on to the leased premises, for rent current and due (but not for arrears); over produce and perhaps machinery and implements; for royalties payable under a lease of minerals; and over crops for current ten duties due in respect of agric. land; (b) a law agent over his client's writs and title deeds, for his expenses (properly a lien), and (c) of seamen, who have a tacit H. over the ship, and the freight due to the shipowner, for their wages; of a shipowner over the cargo for freight due, and of cargo-owners over the ship for loss by improper stowage. Generally speaking, the creditor enforces his security by getting the subject of the H. assigned to him. See Abbot, *Shipping* (14th ed.); Gloag and Irvine, *Rights in Security*.

**Hypothesis** (*ὑπόθεσις*, foundation), in general, a supposition, proposition, or principle assumed as true for the purpose of argument, in order to draw conclusions or inferences for proof of some point in question, or to account for some occurrence. In science a conjecture or tentative theory adopted provisionally as a guide in investigating phenomena. If this conjecture is found after careful tests and examination entirely satisfactory in explaining the phenomena in accordance with known facts and principles, it is accepted as a scientific theory. See E. Naville, *La logique de l'hypothèse*, 1880; Logic text-books by W. Jevons, B. Bosanquet, H. W. Joseph, W. Jevons, *Principles of Science*, 1874; H. Poincaré, *La Science et l'hypothèse*, 1902 (trans. 1905).

**Hypsilanti**, see **YPSILANTI**.

**Hypsipyle**, daughter of Thoas of Lemnos, in Gk. legend. She saved her father when the women of the island slew all the rest of the men. When the Argonauts landed and united with the Lemnian women, H. bore Jason twin sons. Driven from Lemnos when her fathers' escape was discovered, she became the nurse of Opheltes, son of King Lycurgus of Arcadia. While directing the heroes of the siege of Thebes to a spring in the Nemean forest, she left her charge, who was killed by a serpent.

**The funeral games instituted for Opheltes were the origin of the Nemean games**

**Hyacotherium**, name of the best known form of Hyacotheriidae, a family of extinct ungulate mammals belonging to the order Perissodactyla and considered to be the ancestor of the horse. The fossil form is confined to the Eocene strata of Europe and N. America, and shows a small animal 3 ft or so in length, with a complete dentition, a well marked coracoid process on the shoulder blade, four digits on the fore limbs, and three on the hind limbs, and orbit, not enclosed by bone. The radius and ulna are separate as also are the tibia and fibula.

**Hyrax**, generic name of certain small species of mammals forming the order Hyracoidea. *Tremax* is an alternative term. The animals are popularly known as conies and somewhat like rabbits in appearance owing to the long, curved, front teeth, adapted for gnawing, the short ears and reduced tail in the structure of the molar teeth, however they are nearer the ungulate than the rodent. Their bodies are covered with short, close, fine, uniformly coloured, and the sharply pointed snout is split, the digits are furnished with hoofs, the exception of the middle toe of each hind foot which has a long curved claw. *H. syriacus*, the coney of the Bible, ranges over Syria, Palestine, and Mesopotamia; it is of a dull yellow or fawn colour, with a small oval spot on the back; it is noted for its wariness and cannot be caught in traps; the nest is of dried grass and fur in which the young are buried like those of a mouse. *H. capensis* the red rabbit damian or klipdas, is confined to Cape Prov. and Natal.

**Hyrcan** 2, incl. dist. of Persia S. and S.E. of the Caspian (*H. anura* More) separated from Luthia by the Sarikhan Mts (S.E.) with Median W. It corresponds to Afridi and Muzandaran.

**Hyrkanus**, name of two Jewish high priests and princes of the Hasmonean family. (1) *Hirsh (Hirshum) Hyrkanus* (c. 175–101 bc) son of Simon Maccabaeus, first won fame as a general against the Syrians under Antiochus. He became high priest in 104 bc, and of Judaea (135) and founded the Jewish monarchy which continued in his family until Herod seized Judaea. There was much warfare during his reign. At first a Pharisee he later joined the ranks of the Sadducees. See *Die Gräz. Geschichte der Juden*, II, III (1854–7), I, 1–2; *Die Geschichte der jüdischen Völker zur Zeit Christi*, I, 187 ff. (trans. 1810).

(2) *Hyrcanus II*, grandson of above, high priest (c. 71-40 B.C.). His brother Aristobulus disputed the throne with him till his death (71 B.C.). Antipater in later Pompey (63) supported H as a less formidable foe, and Judaea lost her independence. In 40 H was captured by the Parthians, and lived in Babylonia till invited back by Herod (36), who had him executed on a charge of treason (30). See I. Jost, *Geschichte des Judenthums und seiner Sekten*, I, 1857-69, A. Holtzmann, *Judenthum und Christenthum*.

**Hyssop**, or *Hyssopus officinalis*, species of Labiate which forms a genus itself and is a native of Europe, Asia, and the Mediterranean shores. It is a hardy plant, with stems which are shrubby near the ground but herbaceous above. The



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flowers are blue and were formerly used in medicine when dried, the leaves are oil and luscious, and are used in salads and in the making of absinthe, the whole plant is bitter and aromatic. The herb mentioned in scriptural writings is probably a species of Marjoram, the *Origanum* N. which is found plentifully in Palestine. The twigs formed into a bunch would be a sprinkler. (Levi) 22

**Hystispes**, name of an occurring in the fifth of Darius I (486 B.C.) was named in was a member of the royal house of the Achamenids. He was governor or satrap of Lydia under Cambyses (d. 521) and Darius and is sometimes erroneously confused with Zoroaster (satrap of Satrapy).

**Hysteria.** That form of neurotic illness in which organic disease is ruled out for the sake of some person who has the illness. It is solving the problem, fulfilling the wish of satisfaction, the desire either in reality or in phantasy. The symptoms are almost any organic disease may be simulated but rarely with complete accuracy. The symptoms are psychogenic, occur in the mind and few patients have sufficient self-knowledge to produce symptoms of an organic illness with fidelity. It is exemplified hysterical loss of kinesthetic sense often confined to the glove and stocking area, a distribution which does not correspond to the anatomical arrangement of cutaneous nerves. As medical knowledge spreads, the grosser hysterical manifestations such as faints, widespread paralysis etc. grow less frequent, and less definite complaints such as headache and dizziness are more frequently encountered. Loss of memory is often hysterical and patients may wander from home in trance-like states. The patient is never clearly aware of the motive underlying his illness, but the

extent of the self-deception varies and all transitions between hysterical reactions and malingering occur.

Hysterical reactions are more common in women than in men and often occur at puberty and in adolescence. They may follow accidents, particularly where there is a question of compensation and where the underlying motive, unrecognised by the patient, is financial gain. Since the symptoms are psychogenic, treatment is by psychotherapy, which may be given in various ways. Individual hysterical symptoms can often be removed by suggestion (often effectively given with the help of hypnosis) but unless the underlying psychological problems are tackled, or the environmental stress diminishes similar or different symptoms are likely to recur. It may be necessary to alter a patient's environment, as for example by arranging for a child to go to a residential school, away from over-solicitous and fussy parents. Hysterical symptoms may clear up spontaneously when the patient's problems are solved, e.g., by the satisfactory settlement of a claim for compensation. In many cases manipulation of the environment is not

enough, and a thorough investigation of the patient's life becomes necessary with the aim of helping him to understand and solve the conflicts or problems for which his hysterical symptoms are an unsatisfactory solution. *See also* HYPNOTISM; PSYCHIATRY; PSYCHOANALYSIS. *See* D. K. Henderson and R. D. Gillespie, *A textbook of Psychiatry* (6th ed.) 1944.

The term 'Hysteresis' is not synonymous with H., but is a general term for uncontrolled emotional outbursts, often with screaming, sobbing, laughing, struggling etc. Persons who have such outbursts may or may not be hysterical in the technical meaning described above.

**Hythe** (A.-S. port, haven), seaside town and resort of Kent, England, one of the Cinque Ports, on the S. coast 14 m. W. of Folkestone. It is in the diocese of Canterbury and on the S. Region railway. The market-house was rebuilt in 1794 and an old cruciform church—St. Leonard's—has been restored. The Brit. Army School of Musketry (now the School of Small Arms) has been here for many years. The beach and golf-course are fine, but the sea's encroachments have destroyed the harbour. Pop. 8100.

# I

**I**, ninth letter of the Eng. alphabet, called in Gk. *iota* and in Semitic languages *yodh*. In the North Semitic alphabets and in early Gk. it resembled a Z, later the symbol was straightened to I. In the square Heb. script, the parent of the modern Heb. alphabet, the symbol came to be written with a very small sign, hence our words 'Jot' (cf. Matthew, v. 18) and 'jottings' = 'little notes'. In early medieval Lat. *i* was first written with a dot for the sake of distinction with *m*, *u* or another *i*. As to its phonetic value in the Semitic alphabets which were and still are consonantal scripts, it had the consonant value of *y* as in yet, but in Gk. and in its descendants it had the vowel sound *i*. In Lat. it also denoted the consonant *j* pronounced *y* although in Eng. it received the value of *j* as in judge, other *i* it had two sounds, the long or *sh* *i* as in machine, the former resembling the sound of *i* as in machine, and in the continental *i* often written in Eng. *ee* as in meet. The O.E. short *i* (i) has remained practically unchanged in sound of O.E. *sifian* New I. *sit*. The O.E. *lon* *i* (i) which had the continental value *i* (i) in *min* in machine was later diphthongised and in sixteenth century MSS. is often written *ee* of O.E. *ly* New I. *life* mine.

**Iacchus** (Iakch) solemn title of Bacchus used in the Eleusinian mysteries. As the son of Demeter he is usually distinguished from the older Dionysus (cf. Smith). He was a divinity peculiar to Athens. See *Eleusina*, *Gods in Greece* 1891. See **ELEUSINA**.

**Iambic Verse**, in prosody, is applied to verses consisting of a foot called an *iambus* of two syllables of which the first is short and the second long (—). It is supposed to have been invented by Archilochus. It is particularly suited to the Eng. language which falls naturally into short and long syllables. It has perhaps most frequently been employed in blank verse of five feet, the beauty of the rhythm depending largely upon the caesura which fall in the third or fourth foot.

**Iamblichus, or Jamblichus Chalcidensis** (1) Syrian Neoplatonic philosopher of the third and fourth centuries (c. 283 c. 330 A.D.). But few of his philosophical and mathematical works are extant. The *Life of Pythagoras* and *Exhortation to Philosophy* were ed. by F. Kießling (1813; 1815), A. Nauck (1881), H. Pistelli (1888, 1894), N. Festa (1891), G. Parthey (1857) F. Ast (1817) and J. B. Krieger (1790) also ed. selections from his works. See E. Zeller, *Philosophie der Griechen*, III, 1889; E. Vacherot, *Histoire critique de l'école d'Alexandrie*, II, 1851; A. S. Chaignet, *Histoire de la psychologie des Grecs*, v, 1893; T. Whittaker, *The Neo-Platonists*,

1901. (2) a Syrian Gk. writer of the second century A.D. who flourished under Trajan. He was author of *Baßilika*, describing the adventures of the lovers Rhodine and Sinonis. Photius gives an epitome of the romance which is itself not extant (see *Hibotheca*, chapter xciv). See A. Chassign, *Histoire du Roman dans l'antiquité*, 1862; T. Whittaker, *The Neo-Platonists*, 1901; M. de Wulf, *History of Medieval Philosophy* (trans. by E. C. Meeusinger) 1926.

**Iapetus**, Titan, of Gk. mythology, the son of Uranus and Gaia. He was the father of Atlas and Prometheus, and the grandfather of Deucalion, and was accordingly regarded as the ancestor of the human race. He revolted against the new order under Zeus, and was consequently imprisoned in Tartarus.

**Iapetus**, eighth satellite of Saturn, discovered by Cassini in 1671. It has the peculiarity of always appearing brighter when seen to the W. of the planet than when seen to the E.

**Iapygia**, in anct. geography, the name applied by the Gks to Messapia or Apulia, S.E. Italy.

**Iasi**, see **JASSY**.

**Ibadan**, walled native city of Yoruba country, S. Nigeria, W. Africa, 83 m. N.N.W. of Lagos. Cap. of one of the Yoruba states, it is partly autonomous. There is a Brit. resident and assistant judge, and Hausa troops are estab. here. It is a centre of the cocoa industry and some thirty co-operative societies of native cocoa farmers are now affiliated to the Ibadan Union. Pop. (estimate) 385,000.

(C. K. Meek, *The Northern Tribes of Nigeria*, 1921; H. L. Ward Price, *Land and Nature in the Yoruba Provinces*, 1932, and Lord Hailey, *In Africa*, Survey, 1935).

**Ibagué**, or San Bonifacio de Ibagué, cap. of Tolima dept., Colombia 60 m. W. of Bogotá, in a rich agric. dist. There are warm springs and sulphur and silver mines near Guataquisito, on the Magdalena is its port. It has a rail connection with Guadalupe and Llanos are under construction between Llanos and Armenia and Buenaventura. Pop. 62,000.

**Ibajay**, in on the N. coast of Panay Is., Philippines, in Capiz prov. It is a military station near the mouth of the Rio de Ibañay, which rises in Bacalan Mt. and flows N.W. and N.E. to the sea. Amihor is found near the point of Potoi. Pop. about 18,000.

**Ibañez**, Vicente Blasco (1867-1928), Sp. novelist and politician, was b. in Valencia. An ardent revolutionary reformer and political agitator, he suffered exile and imprisonment for his views, but was nevertheless returned sev. times to the Sp. Parliament. So disliked did he make himself there that, solely to displace him,

attempts were made to dispense with the law that gave protection to members of the Cortes. At one time he founded, and for five years managed, an Amer. colony. The latter part of his life he spent in Paris, the centre of a revolutionary and anti-Royalist group.

His earlier novels are by many considered his best—*Arroz y Tartana* (1891), *Flor de Mayo* (1895), *La Barranca* (1898), *Cañas y Barro* (1902), and *Entre Naranjos* (1902). They are realistic in treatment, and describe life in the tus., farms, and fishing vils. of Valencia; they are full of life, colour, and brute force. His next group of novels—*La Catedral* (1903); *trans.* 1909), *El Intruso* (1904), *La Bodega* (1905), and *La Horda* (1905)—are political and sociological. In his third group—*La Maja Desnuda Sangre y Arena* (1908; Eng. trans. as *Blood and Sand*, 1913), *Los Muertos Mandan* (1909), and *Luna Benamor*—he returns once more to his original style, but does not describe the same locality. His *Four Horsemen of the Apocalypse* (1916), was an immense success abroad, both as a novel and as a film. His later books were *Marc Nostrum* (1918), *La Tierra de Todos* (1922), *Alfonso XIII, Unmasked* (1923), and *A Noblest's Tour of the World* (1927). See C. Pitoulet, *Vicente Blasco Ibañeta, ses romans et le roman de sa vie*, 1921.

**Ibarra**, cap. of Imbabura prov., Ecuador, S. America, about 50 m. N.N.E. of Quito. Founded in 1606, it was almost destroyed by earthquake in 1868. It is a bishop's see, and has woollen and cotton mills. It stands at the N. foot of Imbabura volcano. A railway connects I. with Quito. Pop. about 7000.

**Ibbetson**, *John Caesar* (1759-1817), Eng. painter. Though not of the first rank, he produced a few works of charm, and individuality, as in 'The Ascent of George Buggin in Lunard's Balloon.'

**Ibea**, see KENYA COLONY AND PROTECTORATE.

**Iberia**: (1) Gk. name for Spain, probably derived from Ibtus, the Ebro. (2) Name by which Georgia in the Caucasus was known in ant. times.

**Iberian Sea**, name given to the Mediterranean between Spain and the N. African coast of Morocco.

**Iberis**, see CANDYTUFF.

**Iberville**, *Pierre le Moyne, Sieur d'* (1661-1706), Fr.-Canadian naval and military commander, b. at Montreal. He took part in the destruction of Schenectady (1689). In 1699 he founded Fort Biloxi (afterwards Mobile) at the mouth of the Mississippi in Biloxi Bay, and planted a Fr. colony there.

**Ibex**, name of sev. species of *Capra*, a genus of Bovidae, which includes the goats. The Alpine ibex, *Stenobos*, or bouquetin, was formerly abundant in Europe, but it is now rare, and almost extinct through hunting. *C. ibex*, as it is technically called, is larger than common goats, with no beard, long, thick horns curving backwards, and brown hair. It lives on shrubs and lichens and such vegetation as it can obtain on the hill-sides, and leaps for extraordinary distances. From the milk

butter and cheese are made, the hair is clipped and made into ropes, the horns are used for handles, and the skin is dressed and made into shoes and gloves.

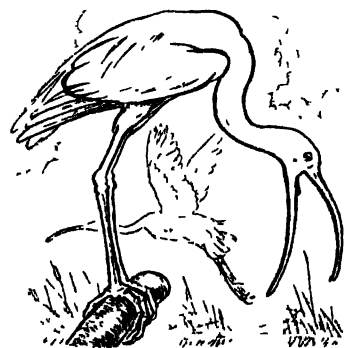


SPANISH IBEX

The I. is very destructive to vegetation and especially to vines, and on this account was freely offered in sacrifice to Bacchus. *C. pyrenaica*, Sp. I., found in the mts. of Spain and Portugal, is characterized by the short black beard and dark shoulder strap.

**Ibiqui**, or **Ibicu**, port in Argentina, S. America, is near the confluence of the Uruguay and Paraná.

**Ibis**, generic name of sev. members of Ibisidae, wading birds related to the storks. They have large bodies with long curved bills, rather blunt at the end, with the



IBIS

upper mandible grooved, long necks and legs, and generally black and white plumage. The most famous species, *I. aethiopica* (or *religiosa*), the sacred I., was formerly worshipped by the Egyptians. It always appeared in Egypt at the rise of the Nile, and was supposed to preserve

the country from plagues and serpents. It could not live out of Egypt, and there it was zealously preserved in temples. Numerous mummified remains of iblises have been found at Thebes and Memphis, wrapped in linen in the ordinary way. *I.* (or *Eudocimus*, *alba*, the white *I.*, is a pure white species found in Florida. *I.* (or *Eudocimus*) *ruber*, the scarlet *I.*, an Amer. species, is brilliant scarlet with a few black patches. *I. fulvifellus*, an African species sometimes strays to Britain and N. America.

**Iblis**, see **EMILIS**.

**Ibn Batûta**, or **Abu Abdullah Mohammed** (1304-78), Arab traveller, *b.* in Tangier. He traversed Persia, Mesopotamia, Arabia, E. African coast, Asia Minor, the shores of the Caspian, Bokhara, Afghanistan, and India, China, Sumatra, and S. Spain. On his return he settled at Fez, and wrote a graphic account of his adventures, valuable for their shrewd, original observations. It was trans. into Eng. by S. Lee (1829), and into Fr. by M. Defrémery and Dr. Sanguinetti (1859). He died at Fez, Morocco. See H. A. B. Gibb, *The Travels of Ibn Batûta*, 1929.

**Ibn Ezra**, or **Abraham ben Meir ibn Ezra** (1092-1167), Jewish scholar and Bible commentator, *b.* at Toledo. He wrote a Heb. grammar, numerous poems used in the Jewish liturgy, a work on Jewish philosophy, and important commentaries on the O.T. He lectured on astronomy and theology. See R. Levy, *The Astrological Works of Ibn Ezra*, 1927.

**Ibn Gabirol**, see **AVICENNON**, **SALOMON BEN GABIROL**.

**Ibn Haukal**, **Mohammed** (d. 976) Arabian geographer and traveller of the tenth century, *b.* at Bagdad. He pub. a *Book of Roads and Kingdoms*, containing an instructive account of Islamic lands accompanied by a map. A MS. copy is in the Bodleian Library.

**Ibn Khallikan** **Abu'l Abbas Ahmed** (1211-82), Arabian historian and scholar, *b.* at Arbela. He travelled in Syria and Egypt, and held the offices of *cadi* at Cairo, grand *cadi* at Damascus, and prof. in one of the colleges, Cairo. He was a poet and compiler. His prin. work is a biographical dictionary, *Deaths of Eminent Men*.

**Ibn Sa'ud**, king of the Hejaz. See **SA'UD**, **ABDUL ASIZ IBN**.

**Ibn Tofail**, **Abu Bakr Mahommed ibn Abdul Malik** (d. 1188), Arabian philosopher, *b.* at the beginning of the twelfth century, at Gundix in Spain. His chief work was a philosophical romance, *Haji ibn Yekdhân*, trans. into Eng. by Percock (1674) and by Ockley (1708).

**Ibn Zohar**, see **AVENZOAR**.

**Ibo**, seaport in Portuguese E. Africa on one of the Querimba Is. Exports ivory, rubber, and wax.

**Ibo**, densely populated country of S. Nigeria. Also the name of the language spoken—a negro-sudanic tongue. Among the Ibo-speaking tribes the earth-goddess, Ala, is regarded as 'the unseen president of the community.' In every vil. she has her shrine, and her priests, as guardians of morality and the public peace,

have political and judicial functions. The land cannot give a living to so large a pop., and large numbers depend on fishing and various trades. Since 1943 the I. of the Udi Div. of Onitsha Prov. have improved their amenities through community development by voluntary labour. See Lord Hailey, *An African Survey*, 1938.

**Ibrahim Pasha** (1789-1848), Egyptian vizier, *b.* at Cavalla, Rumelia, was the adopted son of Mehemet Ali (q.v.) Pasha of Egypt. He reorganised the army on European plans, and helped the Turks against the Gks. In 1831, supporting his father against the sultan, he conquered Syria and became governor of the prov. Mehemet Ali once more revolted against the sultan and Ibrahim inflicted a severe defeat on the Ottoman army at Nezib. The European powers now interfered, and he had to retire before the Brit. troops, losing all he had gained. He went to his private estates at Heliopolis and lived there for six years. In 1848 he was appointed vizier, as Mehemet Ali had become imbecile, but he died shortly afterwards at Cairo.

**Ibrox**, S.W. suburb of Glasgow on the Clyde, Scotland.

**Ibsambul**, see **IPSAMBU**.

**Ibsen**, **Henrik** (1828-1906), *b.* at Skien, a small S. Norwegian timber port. At sixteen he became an apothecary's assistant, intending to study medicine. The



HENRIK IBSEN

E.N.A.

effete puritanism and social prejudices of the Norwegian prov. life, in which his unhappy early years were passed were rich material for the bitter satires on civilisation with which he subsequently stung Europe into fury. His earliest work—*Cathina* (1850), was purely historical, and was inspired by his reading of Salust and Cicero for the examination at Christiania Univ. Whilst continuing his studies

there under the celebrated Heltberg he associated with Jonas Lie, Vinje, Bjørnson, Hotten-Hansen, and others. Thanks to Ole Bull, the violin virtuoso, he became director of Bergen Theatre from 1851 to 1857, and wrote for his productions, but practically all the MSS. have since been destroyed, with the notable exception of the vigorous historical drama, *Lady Inger of Ostrat*. In 1857 he was appointed manager of the National Theatre at Christiania. A year later appeared his first saga-drama, the splendid *Warriors of Helyrland*. The *Prebunders* followed in 1864, and 1873 saw the completion of *Emperor and Galilean*, his greatest historical prose-drama. I., the cynic, pessimist, and iconoclast, made his debut in 1862 with *Lore's Comedy*, cleverly written in epigrammatic verse. In the same style there followed *Brand* (1866), an attack on pietism, and *Peer Gynt* (1867) his most influential and popular dramatic poem, called by many 'the Scandinavian Faust.' It was, however, in the scathing satirical prose dramas which constituted his third period that the I. of European significance found mature expression. In the *League of Youth* (1869), *Pillars of Society* (1877), and *An Enemy of the People* (1882), he attacked the whole fabric of modern politics—as he terms it, 'government by geographical formula.' I.'s studies in feminism are of equal interest and power: *Rosmersholm* (1886) being the best, and the *Doll's House* (1879), in which he discusses the problems of modern marriage, being next in merit. *The Lady from the Sea* (1888) is an elegant poetic conception, essentially the same in idea as the *Doll's House*. In  *Ghosts* (1881) I. exploits to the fullest the possibilities of hereditary disease as a dramatic motif. *The Wild Duck* (1884), an unsatisfactory piece of symbolism, is, like *Brand*, an attack on unpractical idealism. His later works are: *Hedda Gahler* (1890), *The Master Builder* (1892), representing the zenith of his powers, *Little Eyolf* (1894), *John Gabriel Borkman* (1896), and *When We Dead Awaken* (1909), all of which are chiefly developed from the ideas contained in his earlier works. All his writing is pre-eminently suited for the stage, and consummately skilful in technique. See (i) B. Shaw, *The Quinlence of Ibsenism*, 1891; *Skandinaviaerken* (collected works), 1898; G. Brandes, *Ibsen and Bjørnson*, 1899; W. Morison, (trans.) *Correspondence*, 1905; W. Archer and others (ed.) *Collected Works*, 1906-12; E. Gosse, *Henrik Ibsen*, 1907; M. J. Moses, *Henrik Ibsen: the Man and his Plays*, 1908; R. Ellis Roberts, *Henrik Ibsen*, 1912; A. Orbeck (trans.) *Early Plays*, 1921; W. Mohring, *Ibsen and Kierkegaard*, 1928; J. Kroner, *Die Technik des realistischen Dramas bei Ibsen und Galsworthy*, 1935; B. W. Downs Ibsen, *The Intellectual Background*, 1940; P. F. D. Tennant, *Ibsen's Dramatic Technique*, 1948; various plays in Everyman's Library, trans. by R. Farquharson Sharp.

**Ibstock**, vil. in Leicestershire, England, 5 m. N. of Market Bosworth. Archbishop Laud was rector of the par. church. The

inhabs. are chiefly occupied in mining and in manufacturing tiles and bricks. Pop. 3000.

**Ibycus**, Gk. lyric poet of about 540 B.C., b. at Rhegium, Italy, and spent most of his life at the court of Polycrates of Samos. According to tradition he was murdered at sea near Corinthus. The crime was traced by means of cranes which had followed the ship, and 'the cranes of Ibycus' became a proverbial expression for divine revelation of crime. The story is the subject of Schiller's poem *Die Kraniche des Ibycus* (1798); for fragments of his verse, see Diehl, *Anthologica Lyrica Graeca*, ii. (2nd ed.) 1912.

**Ica**, dept. of Peru, bounded N. by Lima, S. by Arequipa, E. by Ayacucho, and W. by the Pacific; covers an area of 9798 sq. m. Much of the surface is sandy desert, but the valleys of the Chincha, Condor, and I. are fertile, and yield fruits, cotton, and indigo. Wine and brandy are made from the fruit, and a considerable amount of copper is mined. The chief tn. is I. (San Gerónimo de I.) which was ruined by an earthquake in 1617. Pop. (dept.) 110,800; (tn.) 21,200.

**Ica**, or Putumayo, riv. in Ecuador, S. America, rises in the Andes, flows S.E., and at São Antonio, in Brazil, joins the Amazon. It is navigable for small craft for 750 m.

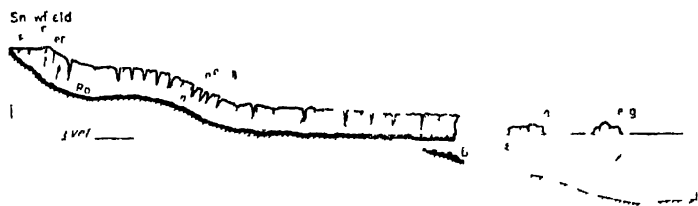
**Icarus** (Gk. *Ἰκαρος*). (1), or Icarus, in Gk. legend an Athenian, taught the cultivation of the vine by Dionysus in return for hospitably entertaining him. I. distributed his new gift freely, and the shepherds of the neighbourhood becoming intoxicated, thought they had been poisoned by him and slew him, throwing his body into a well. Erigone, his daughter, hanged herself in despair on learning the news of her father's death. According to tradition, Erigone is the Virgin in the zodiac, Icarus is Bootes, and Icarus's dog, Maira, is Procyon or Canis Minor. (2) Lacedaemonian, was the father of Penelope, whom he tried to dissuade from accompanying her husband, Odysseus, to Sparta. She insisted on carrying out her intention with such modest trimness that her father erected a statue of modesty in her honour.

**Icarus**, see ICEBERG 4.  
**Ice** (a word common to the Teutonic languages), name given to the substance into which water changes when subjected to a sufficiently low temp. It is a colourless crystalline solid, generally assuming forms belonging to the hexagonal system; its habit of twinning is the origin of the 'ice-flowers' and designs assumed by hoar-frost. In the form of hoar-frost, snow, and hail I. is often precipitated. The temp. at which water freezes into I. is very easily determined, and for this reason is employed as one of the standard temps. in the measurement of the scales of a thermometer. In the Centigrade system this temp. is zero, as in the Réaumur, whilst in the Fahrenheit system it is 32°. In the act of freezing, I. undergoes a noteworthy expansion, so that I. at 0° C. is not so dense as water, as is proved by the fact that it floats thereon. In the converse process of melting, I. contracts,



and the water formed contracts under heat till the point of maximum density, about  $4^{\circ}\text{C}$ , is reached. Above this temp the expansion of water is continual, and at no temp is water less dense than  $1$ . The density of  $\text{I}$  at  $0^{\circ}\text{C}$  is  $.917$ , of water at  $0^{\circ}\text{C}$ ,  $.9998$ , at  $10^{\circ}\text{C}$   $1$ , at  $10^{\circ}\text{C}$ ,  $.99976$ , and at  $100^{\circ}\text{C}$ ,  $.95866$ . The coefficient of cubical dilatation of  $\text{I}$  at moderately low temps has been calculated as  $.000105$ , and its specific heat is  $.50$ , or about half that of water. When  $\text{I}$  is melted although no rise of temp takes place a definite quantity of heat is absorbed, namely  $80$  calories per gram, and the same amount of heat is given out when water becomes  $\text{I}$ . This is expressed in the latent heat of fusion of  $\text{I}$ . Since water expands on freezing its

configuration of the land. Many traces, for instance, are left by glacial action, which serve to show that the whole of Europe was at one time much more exposed to such action than now. (See GLACIAL ACTION, DENUDATION, BOULDER CLAY, etc.) In the Upper Provs. of India water is made to freeze at night by being placed in porous vessels, wrapped round with a wet cloth. In Bengal pits are dug  $2$  ft deep and filled for three quarters of the depth with dry straw. The water is then laid on this straw in flat porous jars. It evaporates at the expense of its own heat and the cooling is rapid enough to neutralise the slow influx of heat through the cover above. The use of  $\text{I}$  in many of its applications is allied



THE FORMATION OF ICEBERGS

Movements of the water likely to bring a berg mass at the crack A. At B, rock debris is being brought down by the glacier. It is a terminal moraine in the water.

freezing point must be lowered by an increase of pressure, and it has been ascertained that for every additional atmosphere of pressure, the freezing point of water is lowered  $0.0075$  degrees. This discovery was theoretically worked out by James Thomson in 1851, and verified experimentally by his brother, Wm. Thomson (Lord Kelvin) in the following year. Many of the properties of  $\text{I}$  are explained by this, among others that of regelation, by which two blocks of  $\text{I}$  laid side by side in contact gradually fuse into one. The pressure at the point of contact melts the  $\text{I}$ , but this relieves the pressure and the water at once freezes again, until in time the two surfaces coalesce. The motion of glaciers is also probably due to this process.

$\text{I}$  forms on fresh water if the temp. of the air is below freezing point for sufficient time, but not until the whole mass of water is cooled down to the point of maximum density. Sea water will not freeze, under the most favourable conditions, until a temp. of  $-2^{\circ}\text{C}$  is reached, in the  $\text{I}$  formed four fifths of the salt originally present is rejected, so that water melted from sea ice has less salinity than the surrounding sea.  $\text{I}$  exists on a gigantic scale in the glaciers and snows of mountainous regions, especially in the seas and lands of both Polar regions. From a physiographical point of view,  $\text{I}$  is an important agent in the denudation and

corries is growing.  $\text{I}$  is also largely used by artificial means. For details as to methods, etc., see ILLUMINATING

Ice-Age, see GLACIAL PERIOD

Ice, Anchor, see ANCHOR ICE

Iceberg (Ger. *Berg*, int.) a hill of ice rising often as much as  $270$  ft above the sea. It is a floating mass which has broken away from some great mass of ice sheet in the Polar regions and which drifts away from its frozen base into warmer navigable water. When the  $\text{I}$  first breaks away, the future is green or blue, but when it comes within view of whalers and other vessels, its cliff-like faces and its jagged pinnacles glisten in the sunshine with a dazzling white. During its first flight in  $\text{I}$  strewn is abed with pebbles and rocks and other detritus—the remnant of its glacier days. As it enters warmer zones, it melts, disintegrates, tilts and often overturns. From the sp. gr. of ice it is calculated that only one-ninth of  $\text{I}$  appears above the ocean surface and as their speed is often considerable, it is clear that they are a grave source of peril to passing ships. It was collision with an  $\text{I}$  which caused the wreck of the *Titanic* (1912). Since that time, an International Iceberg Patrol has been maintained jointly by Britain and the U.S., and operated by the U.S. Coast Guard Patrol for the location and destruction of  $\text{I}$ . From Feb., for about three months, the patrol annually plots the

movements of some thousands of icebergs, and radios their positions to shipping. Aircraft are used, too, in the search, and any ship sighting an I. must report the position. The destruction of the Is. cannot be hurried: explosives, gunfire, and even flame-throwers have been tried to hasten their end, but in vain.

**Ice-breaker.** Many of the harbours of N. Europe are frozen over for a great part, or the whole, of the winter, to a depth of sev. ft., so rendering navigation impossible. The only method of keeping a channel open is to prevent the ice from freezing too thickly, and this is done by the continuous passage up and down of a specially-designed vessel. Such vessels are known as Is., and naturally present some peculiarities in construction. They must be both weighty and powerful, of exceptional strength, and capable of travelling at sufficient speed to break the ice by their momentum. In addition to cracking the ice into pieces of some score tons, they are constructed to slide up on to the ice and break it down with their weight. The *Ernak*, built for the Russian Gov. by Sir Wm. Armstrong & Co., was the first important ship of this kind. She had a length of 320 ft., a breadth of 71 ft., her displacement was 8000 tons, and her engines, of 8000 I.H.P., developed a speed of 15 knots. The *Ernak* could break her way through 12 or 13 ft. with ease, and has rammed through 31 ft. She rescued on one occasion eight out of nine vessels which had been caught in the ice, the last one sank before the *Ernak* could reach her. In 1917 yet larger and stronger ships, the *Sriolator* and the *Lenin*, were built by Armstrongs for the Russian Gov. The *Lenin* could get under way in five mins. after being frozen in all night. These Is. are also passenger ships. A smaller I., built on the same lines, the *Sampo*, was built for the gov. of Finland. Many Canadian and Amer. ports are only kept open by the use of ice-breaking ferry-steamers, such as the *Neota*, built by Armstrong, Whitworth & Co. to carry railway trains across the Straits of Canso to and from Port Mulgrave, Nova Scotia. In 1906 the I. *Lady Grey* was built for the Canadian Gov. by Vickers, Maxin & Co., and in 1909 the *Earl Grey*, on the same lines, but modified for extra speed, was built by the same firm. Since these vessels were built many ships that use the Canadian ports and the St. Lawrence R. are built on the ice-breaking principle—that is, with a sharp keel that rises diagonally to the front of the ship, lifting it on to the ice by the sheer force of the drive and cracking the ice by its weight. Is. are built on the watertight compartment principle, as there is always a chance of some part of the bottom or sides being pierced or crushed. The hull of an I. has a very stout frame with the ribs spaced very close together, 12 ins. fore and aft and 10 ins. in the middle, while the plates are of unusual thickness. The outer skin is double right fore and aft along the water-line and to the bottom of the keel, where the friction of the ice is apt to wear away the material. Tanks are fitted in

the fore part which can be filled at the rate of 250 tons an hour in order to give the required weight. The counter is specially strengthened so that she can break ice when going astern, and the rudder is built in the form of the ship to escape injury.

**Ice-flowers.** see FROST FIGURES.

**Ice Hockey.** originated under the name of 'Bandy' in the Fen country round the vil. of Farith over a hundred years ago. Since that time it has been played elsewhere in England, and has been introduced on the Continent, into America and into Canada where it is the national game. For the game of 'Bandy' there were eleven players a side, the stick or 'bandy' was like a hockey stick, and the ball was a rubber lacrosse ball. But the game, developed in America and Canada since 1867, is now played somewhat differently under the name of I. H. In I. H. there are six players a side, using a large broad-bladed type of hockey stick, but instead of a ball the game is played with a vulcanised rubber disk called a puck. Four reserves are allowed to each team. The arena is enclosed by wooden barriers about three ft. high, and this means that the puck does not go out of play frequently. The goals are each 4 ft. high by 6 ft. wide, and stand in goal areas 8 ft. by 5 ft. This fact, coupled with the slippery surface, makes the game exceedingly fast, and it is generally claimed to be the fastest game in the world.

**Ice, see MOUNTAINS.**

**Iceland**, is, a republic situated in the N. Atlantic Ocean. It is 250 m. from the S.E. coast of Greenland and 600 m. W. of Norway. Its area is over 37,700 sq. m., length 298 m., and breadth 191 m. The total length of its coast-line is about 3730 m., about one-third of which belongs to the N.W. peninsula. In shape it is a rough oval, its narrowest point being at the S. The coast-line presents a continued succession of deep bays or fjords, penetrating far inland except for a considerable portion extending along the S.E., which is almost unbroken. I. is an ice-covered plateau or tableland built up of volcanic rocks and pierced on all sides by fjords and valleys. The lowlands cover about one-fourteenth of the whole area, and are almost the only part of the Is. which is inhabited, the central tableland being absolutely uninhabitable on account of the rigour of the climate. The habitable area of I. is about one-fourth, glaciers, lava-streams, and elevated deserts making up the rest. The two bays, Hinnarloi and Breithufjord, separate the N.W. peninsula from the main mass of the Is., thus forming two tablelands—a large and a small. The isthmus connecting the two is scarcely 5 m. wide, but has an altitude of 748 ft. The N.W. peninsula has an elevation of 2000 ft. The interior of the Is. has a wild and desolate appearance and is covered by lofty mt.-masses of volcanic origin, many of them crowned with perpetual snow and ice. The glacier fields cover over 5000 sq. m., and glaciers exist in all the mts. above 4000 ft. In sev. of the mts.

the volcanic agency is still active, and terrible eruptions have repeatedly occurred within the last four centuries. The best known volcanoes are Hekla, Katla, and Askja. A large portion of I. is covered with lava, and the hot springs or geysers scattered throughout the is. are other specimens of volcanic agency. These are especially found in the S.W., where one of the main geysers throws up at intervals jets of water, stones, and mud to a height varying from 100 to 200 ft. In Mt. Hekla (5095 ft. high), which last erupted in March 1917, are best exhibited the general effects of volcanic agency.

The scenery of the is. is of great natural beauty, the climate is mild for the lat., and the weather is extremely variable, storms and hurricanes often occurring. The vegetation is tolerably uniform throughout the is., presenting the characteristics of an Arctic-European type. Heath and bilberry cover large stretches of the surface, and grasses are of great importance to the inhabs., who are dependent on them for supplying their live-stock. The development of forest-trees is insignificant, the birch being almost the only tree found, and this in a very stunted form, 10 to 10 ft. in height. The wild flora of I. is small and delicate, with bright bloom, saxifrages, sedums, and heaths being especially admired. As regards the fauna, species are few. The polar-bear is an occasional visitor, and reindeer were introduced in 1770. The seas abound in seals and whales. Over half of the species of birds are water fowl, of which the most important is the eider-duck on account of its down. The birds of prey are the Icelandic falcon and the eagle. The ptarmigan is the only game bird. Great numbers of sea-gulls, gullmots, and puffins are seen near their breeding places on the cliffs and islets round the coast. The hooper or whistling swan is also found in considerable numbers in I. The cod-fisheries are valuable, trout are plentiful in the lakes and streams, and salmon abound in many of the rivers. The sea round the coast teems with haddock, halibut and basking shark. There are no railways in I.; but in 1910 there were some 2800 m. of completed roads. The national Church and the only one endowed by the State, is Evangelical Lutheran. There is a univ. in Reykjavik. The chief products of I. are fish, fish oils, wool, mutton, and ponies. The chief exports are salted fish, meat, fish oil, and timber, and much of them go to the United Kingdom. Reykjavik has a pop. of 18,900. Other towns are Akureyri (6100), Hafnarfjörður (1100), Vestmannaeyjar (3100), Siglufjörður (2900), Laufjörður (2800), Almannagjá (2300), Nes (1200), Ólafsfjörður (915) and Seyðisfjörður (811).

**History.**—I. received the greatest portion of its pop. from Norway between 800 and 870, when it was colonised by Norsemen or Scandinavian Vikings, though some settlements of Irish monks had been made about the end of the eighth century. The first Norwegian settlement was made in 870 by Ingolf on

the S. coast, and was estab. permanently four years later at what is now Reykjavik. Other settlers soon followed, and in the course of sixty years all the habitable parts of the coast were settled. The gov. was at first in the hands of the overseer of the temple in each settlement, but latterly, when the separate jurisdictions were joined together, a kind of aristocratic republic was formed. Christianity was introduced in 981, and adopted by law in 1000, and schools and bishoprics were estab. I. was a dependency of the Dan Crown from 1380. In 1918 I. again became a sovereign state, but united as a constitutional monarchy to Denmark with one king. Following the annexation of Denmark by the Gers. (April, 1940) the Icelandic ministry assumed control of its own foreign relations. Soon afterwards the is. was occupied by Brit. naval and military forces with the object of protecting Brit. maritime interests, because the is. was of great strategic importance in relation to U-boat warfare and as a potential base for the invasion of the Brit. Isles. In 1911, the Althing decided to estab. a republic; but pending the formal abrogation of the union with Denmark a regent was appointed from year to year. In July 1911, President Roosevelt announced that Amer. forces had occupied I. These forces were not intended to replace the Brit. forces. President Roosevelt, in a message to Congress, said that the U.S. could not permit occupation by Germany of strategic outposts in the Atlantic to be used as air or naval bases for an eventual attack against the W. hemisphere. The Brit. guarantee of the future of I.'s independence was repeated by Mr. Roosevelt, who said that the U.S. Gov. did not wish to see any change in the existing sovereignty of the country. By extending Amer. defences to I., a half-way house between Britain and America, Mr. Roosevelt had taken a step that was of enormous consequences in safeguarding the line between the U.S. and Britain. By plebiscite (May 25, 1944) the Act of Union of 1918 was repealed and a new constitution adopted providing for a republican form of gov. Executive power is in the hands of a ministry at Reykjavik, responsible to the national legislative assembly or Althing (founded in 930 A.D.) of two houses. The membership of the Althing is maintained, under the new constitution, at 32, of whom 14 are elected to form the Upper House.

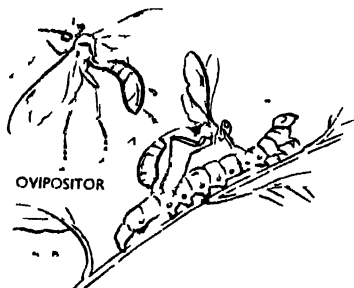
**Language.**—The Icelandic is the most northerly of all cultivated tongues. It is free from gutturals and excess of hissing sounds, soft and sonorous to the ear, and rich in roots and grammatical forms. There are thirty-three letters in the alphabet, all the Eng. except w, also v, (the German ä and ö), ð, and two characters for the Eng. th. The present-day language is almost precisely the same as that spoken and written at the date of I.'s colonisation in the ninth century.

**Literature.**—Icelandic literature may be divided into two periods, the ant., extending to the fall of the republic, and the modern, from that date to the present



The former was regarded as sacred by the Egyptians, who gave it the name of Pharaoh's rat, the embalmed bodies of Is were often preserved by priests in the temples. They will eat the eggs of serpents and swallow smaller vermin, and are sometimes domesticated for this purpose.

Ichneumon, see also MONGOOSE



ICHNEUMON FLY

CALLED FLY

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**Ichneumon-flies**, name applied to the Ichneumonidae, a family of insects, containing nearly 5000 species, and belonging to the order Hymenoptera. They are found in almost all parts of the world, and in the larval state are generally parasitic, and occasionally on Lepidoptera and other orders of insects. The Ichneumon flies thus destroy thousands of caterpillars and are even inimical to spiders. The distinguishing features of the Ichneumonidae are the long, jointed antennae, closely computed at the extremities. The genus *Ichneumon* are wingless Ichneumon, and are very common in Britain. *Ichneumon armatus* is a remarkable British species which goes under water for the purpose of depositing its eggs in the larva of Trichoptera.

**Ichor** (Greek *ichor*), which according to Greek mythology flowed in the veins of the gods instead of blood. The word is still used in the poetic sense. In pathology it signifies the watery acid discharge from all contused wounds.

**Ichthyodorulites** (Greek *ichthys*, fish, *dorulites* and *ichthos* stone) fossil spines of sharks, which are often found isolated in ancient strata the rest of the skeleton having rotted away. Over forty genera of I are recognized as *Onchus*, *Ctenacanthus*, *Lepranodus*, *Idodus*, etc.

**Ichthyology** (Greek *ichthys*, a fish), term applied to that branch of zoology which treats of fishes (q.v.).

**Ichthyopteri**, see ICHTHYOSAURUS.

**Ichthyornis** (Greek *ichthys*, fish and *ornis*, bird), name given to an extinct genus of禽inosaur or flying birds with a beaked breast bone which are found only in the Cretaceous strata of N. America. They form a group called Odontornithes, because

of their having rows of reptile teeth fixed in distinct sockets, they were birds of powerful flight, as shown by the construction of their wings. In shape, they resembled modern birds very closely, and they were about the size of a pigeon. Most of the specimens of I are preserved in Yale Univ. and in the Univ. of Kansas.

**Ichthyosaurus**, or **Ichthyopteri** (Greek *ichthys*, fish, *sauros*, lizard), name applied by Konig in 1818 to a kind of porpoise shaped marine reptile, with a fish like body, from its outward appearance. They belonged to the Mesozoic period, becoming extinct after the deposition of the chalk. Nearly complete skeletons have been obtained from the basins of England and Germany. Ichthyosaurs also occur in the Rhetic Jurassic, and Cretaceous strata of Europe, Australia, Africa and America. Those of the latter Cretaceous age being distributed all over the Indies and New Zealand. They varied in length from about 1 ft to 10 yds. The *Ichthyosaurus* from Banz, Bavaria, the largest known, reaches the head measuring over 2 yds. The Eng. *Ichthyosaurus* was about the same size. The commonest Eng. species *Ichthyosaurus intermedius* and *Ichthyosaurus minor* were about 1 to 1 yds long, probably originally descended from land or marsh animals. The earliest known Ichthyosaurs (*Mosasaurus*) were very small and occur in the Trias. They had large heads with a slender, pointed snout, the eyes surrounded by a ring of overlying 'sclerotic plates' and jaws with a row of conical teeth, much of a size fairly set in a continuous groove. As many as 100 teeth have been counted in a



ICHTHYOSAURUS

single mouth. They breathed air and were carnivorous, feeding on fishes and molluscs. Their bones and cartilages have supplied quantities of phosphate of lime for prepaing artificial manures. The reptiles were apparently viviparous. The bones of the skeleton show numerous short vertebrae, deeply biconcave, making the backbone very flexible. There is scarcely any neck, the head passing

directly into the fusiform body, which tapered to a bifurcate tail. Two pairs of paddle-like limbs or swimming flippers enclosed in skin are always found—the pectoral and pelvic fins. The hinder are often small, but never absent altogether. The skin is smooth, forming two triangular median fins, one in the middle of the back (dorsal) and one at the end of the tail. Examples are in the museums of Stuttgart, Tubingen, Budapest and Chicago. The terminal vertebra passed into the lower lobe of the tail fin which was expanded in a vertical plane. Behind the dorsal fin was a row of smaller inner fins, as seen in a specimen from Wurttemberg (1892). The resemblance between the *I* and the whale is a striking example of convergence between two distinct races—reptiles and mammals—resulting from adaptation to aquatic life. The Baplanodon Shasta-aureus and Ophthalmosaurus are allied Ichthyosaurs. See C. A. von Zittel, *Treatise of Palaeontology*, II, 1902; *British Museum Guide to Fossil Reptiles and Fishes*; and *Catalogue* by Dr. Woodward; J. Hawkins, *The Book of the Great Sea Dragons*, 1810; F. von Huene, *Die Ichthyosaurier des Juras*, 1922.

**Icknield Way**, ancient pre-Roman road of the Iceni across S. England. It runs from the Wash in a S.W. direction by way of Cambridge through Ely, Elythworth and Eling in Hertfordshire, making its way over the Thames and following the line of the Berkshire Downs to the source of the Kennet in Wiltshire.

**Icolmkil**, see IONA.

**Icon**, representation of Christ, an angel, or a saint, found in Gk. and Orthodox E. Churches. It is painted on a flat surface, but parts are often covered with gold or silver embossed plates. See also ICONOCLASTS.

**Iconium**, a Phrygian city including Darnaseus in antiquity and important in ancient times. Paul visited it on his first journey, coming from Antioch, and met success among both Jew and Gentiles (Acts, xiii 51–xv 15). Well adapted for defence, it owed its continuance to its central position and its well watered fruitful district. It became a Roman colony, and in later times was the cap. of the Syriac Empire. It is represented by the modern Konya, in the plain of Lycaonia N. of the Taurus (see KONYA).

**Iconoclasts** (Gk. *κονκλαστες*, image-breakers), name applied to the Christian party in the church of the eighth and ninth centuries who refused to tolerate the use of images in places of worship. In the early Christian church only symbols like the fish, palm branch, or dove were used, but by the fourth century sacred pictures were apparently common and denounced by the 5th Council of Ephesus (456). The sixth General (Ecumenical) Council of Constantinople (682) sanctioned the representation of Christ as a Man, and the second council of Nicea (787) allowed sacred images in the churches. Distinction was made between *προσκύπτεις τιμητική* or *δουλεία*, veneration, and *προσκύπτεις λατρευτική* or *λατρεία*, worship due to

God alone. The Byzantine Emperor Leo III (the Isaurian) issued an edict (726) forbidding honours to be paid to images. Another decree of 730, prohibited image worship as idolatrous. Constantine V, Leo IV, and Michael Balbus were also I, while Popes Gregory II and III and Gerimus, patriarch of Constantinople, were like the Empress Irene, supporters of the iconolatri (image-worshippers). One result of the quarrel between the iconolatri and I was the session between E and W. Rome became linked with the Constantinian house, and the Pope crowned Charlemagne in 800. The Roman Church emphasised the utility of pictures and statues for teaching the illiterate (Council of Trent sess. xxv). Image worship was restored in the E under Theophilus and Theodora (842). Records of the reforming I of the seventh century protestant image worship had been practised considerably in Britain. See Acts of the Iconoclast Council of 815. In *Sciences Académiques des Inscriptions*, 1901; I. Marin, *Les Monnes de Constantinople*, iv, 1897; J. Brecher, *La Querelle des images*, 1904; J. Hastings, *Manual of Religion and Ethics* (1911), vol. vii; J. von Veigh, *Die Bildersturm*, 1911; G. Ostrogorsky, *Stellen zur Geschichte des byzantinischen Bilderstreits*, 1929.

**Ictinus**, famous Gk. architect who lived towards the end of the fifth century B.C. and was thus a contemporary of Ictinus and Ictinus. His name will always be associated with the Parthenon at Athens, which he designed in conjunction with Callicrates (447–439 B.C.). I was also the architect for the temple of Eleusis, where the mysteries were celebrated and for the temple dedicated to Apollo Epikourios near Phigalia in Arcadia. Portions of all these buildings still exist.

**Ida** (477 B.C.) first king of Bernicia, was in the prime of life when he assumed power. His rule probably did not extend S. of the Tyne, the kingdom of Deira, between that river and the Humber, being founded after his death. He built a fortress called by the Anglo-Saxons, Bamburgh, six of his sons reigned in succession over Bernicia.

**Ida**, or **Ida**, in W. Africa situated on the N. of the Niger, near the boundary of N. and S. Nigeria. Pop. about 8000.

**Ida** (Turkish *Kaz-Dagh*), mt. range in Asia Minor, which extends through Phrygia and Mysia and commands the ancient plain of Troy. Mt. Gargarus (715 ft.), its highest peak, was the seat of the temple erected to Cybele, the *Idra Mater*.

**Ida**, **Mount**, or **Psilorati**, in Crete, was famous in the worship of Zeus, the god being nurtured, according to mythology, in one of its caverns. This celebrated peak is situated almost in the centre of the island and rises to a height of 8060 ft.

**Ida**, **Mount**, New Zealand, situated in the S. Is., about 70 m. N. of Dunedin, gold fields have been discovered in its neighbourhood.

**Idaho** (Indian, mountain gem), Rocky Mt. state of U.S.A., largely in the basin of Columbia R. It is bounded N. by

Brit. Columbia and Montana, E. by Montana and Wyoming, S. by Utah and Nevada, W. by Oregon and Washington. These limits were fixed in 1868, five years after the formation of the ter., which was admitted to the Amer. union in 1890. Area 83,557 sq. m. The Snake (Shoshone or Lewis) R. is on the W., noted for its cañon and numerous cataracts. Goose Creek and Bear R. Mts. come S. and S.E. of Salmon R. Mts., which divide the state into N. and S. Idaho, and separate Snake R. valley from Great Salt Lake basin. Besides the mountainous regions there are desert and sage-plains and fields of basalt. All geological ages from the Silurian to the Pliocene are represented, especially the Tertiary and post-Tertiary periods. Gold has been found on Pend d'Oreille R. since 1852. The Camur d'Alene mines of gold, silver, copper, and lead are famous. Coal, salt, sulphur, and iron-ore are also found. The land is more suited for grazing than agriculture, but wheat, oats, barley, and potatoes are produced. The ann. mineral production is over 10,000,000 dollars. A great source of wealth is timber, of which nearly a billion ft. are cut each year. An extensive irrigation scheme has been carried out which adds another half-million acs. to irrigated lands. There are twenty-three cos., the chief tns. being Boise (cap.), pop. 26,130; Pocatello, 18,100; Idaho Falls, 15,000; Camur d'Alene, 9000; Lewiston, 9500; Nampa, 9000; Twin Falls, 9000; Moscow (with state univ.), 5000. The state has a governor, a senate of 44 members, and a house of representatives of 59 members, all being elected for 2 years. I. is represented in Congress by two senators and two representatives. The leading religious denomination is the Mormon Church. There are numerous elementary schools, two normal public schools, and denominational colleges. Pop. 521,800. See H. H. Bancroft, *Washington, Idaho, and Montana*, 1890; J. E. Rees, *Idaho Chronology*, 1918; F. E. Lukens, *Idaho Citizen*, 1925; Annie Greenwood, *We Sagebrush Folk*, 1934; Federal Writers' Project, *Idaho, a Guide in Word and Picture*, 1937; M. D. Beal, *A History of South-Eastern Idaho*, 1912.

**Idaho Springs**, banking tn. and resort of Clear Creek co., Colorado, U.S.A., on Colorado and S. Railway, 30 m. W. of Denver. Situated in the plateau regions of the Rockies, it has hot and cold soda-springs, and gold and silver are found. There are concentrating mills, machine-shops and lumber-yards. Pop. 15,200.

**Idaliu** (Gk. Ἰδαλιον), anct. tn. of Cyprus, was situated almost in the centre of the is., on the site now occupied by the vil. Dalin or Idalion. It was sacred to the worship of Aphrodite, who was hence named Idalia. The tn. was destroyed by earthquake before the time of Pliny.

**Idar**, tn. of Oldenburg, Germany, on the Idarbach. Pop. 8000.

**Idea** (Gk. ἰδέα), in Gk. mythology, was the son of Aphareus and Arene, and brother to Lynceus; he wooed Marpessa, daughter of the riv.-god Kuenos, and carried her off from Apollo, who also

sought her favour. They fled in a winged chariot given by Poseidon, but were overtaken by Apollo at Messenia, where god and mortal fought for the nymph. Zeus, interposing, told her to choose between her suitors and she chose I. She became the mother of Cleopatra and Alcyoné, and having incurred the wrath of Apollo, they d. young. I. and his brother both took part in the Argonautic expedition; they were killed whilst engaged in a raid into Arcadia with their cousins Castor and Pollux. Zeus came upon them as they were quarrelling about the plunder and slew I. by lightning.

**Idesleigh**, Sir Stafford Henry Northcote, first Earl of (1818-87), Eng. statesman, began his political life in 1842, when he became private secretary to Gladstone. He succeeded as eighth baronet in 1851, and four years later entered Parliament in the Conservative interest. Disraeli appointed him president of the Board of Trade in 1866, and in the following year promoted him to the India Office. In 1874 he became Chancellor of the Exchequer, and in 1876, when Disraeli went to the House of Lords, he became leader of the House of Commons. Created earl of Idesleigh in 1884, he went to the Foreign Office in 1886. An unselfish man always putting party before himself, he was an admirable and much-loved statesman, though scarcely of the first rank, being lacking in initiative. See Andrew Lang (ed.), *Life, Letters and Diaries*, 1890.

**Ide Languages**, see **INDO-EUROPEAN LANGUAGES**.

**Idea** (Gk. ἰδέα, from ἰδέναι, to see; Lat. *species*), term widely used both in philosophy and in common parlance for a mental image of any external object or for the abstract conception of a class of objects. It is also used in a wider sense for any product of intellectual action. Plato made use of the term in metaphysics to define the absolute realities eternally existing in the mind of God, or the model of which all the objects which can be perceived are made. These vary in detail, but the one archetype or 'Idea' remains constant, and can be apprehended only by the action of the intellect. Empirical thinkers, who insist on the reality of external objects, have never accepted this usage. Locke, at the beginning of his *Essay on the Human Understanding*, defines the term 'idea' as 'whatsoever is the object of the understanding when a man thinks,' including, that is to say, all objects of consciousness—percepts, images, and concepts. Hume limited the term to the mentally reconstructed images of perceptions, while he introduced the term 'impression' for the direct perception. This use of the term is still common in popular language. Kant defined *Is* (called by him Transcendental *Is*.) as the product of the Reason (*Vernunft*), of which they are the highest concepts, transcending the understanding, and therefore incapable of verification by experience. In the language of Hegel and the Idealists, the term almost returned to its Platonic significance, being used for the Absolute, which is the beginning and

end of all things. See A. Schopenhauer, *The World as Will and Idea*, trans. 1883-1886; A. N. Whitehead, *Adventures of Ideas*, 1933; H. Heyse, *Idee und Existenz*, 1935; N. Hartmann, *Zur Lehre vom Eidos bei Platon und Aristoteles*, 1911.

**Idealism**, conception in philosophy which holds that ideas are the only things known. The conception is developed along different lines by various philosophers, among them being Plato, while later systems were evolved by Locke, Descartes, and Spinoza up to Berkeley, but perhaps the most widely known are those of Leibnitz, Hegel, and Kant. Broadly speaking, I. may be discussed under the two main systems of subjective I. (or, as it is sometimes termed, Spiritual Monism or Pluralism) and Spiritual Monism.

Subjective I. was expounded by Leibnitz as a belief that each individual mind exists apart from every other mind as a distinct unit living as it were in a universe of its own, so that nothing happening in another mind's universe is the same as that which happens in its own. We are aware, not of objects themselves, but merely of sensations produced by the objects which bring consciousness of them from our sensory disturbances. We become aware of the sensation rather than the object. Thus we experience not things of the world, but our own feelings, which give us images and representations of the world of objects. This position is known as Representationalism. Berkeley and Hume and perhaps the Itz. Croce and Gentile belong to this school. Berkeley shows that there is, at least to us, no external world, since all we know is our impressions of matter. He says in effect 'its existence consists in its being perceived.' This conclusion is strenuously criticised by Realists (see REALISM). Spiritual Monism differs from this theory, particularly regarding its sense of isolation of the mind. Hegel, with whom may be associated Schopenhauer and Bergson, though each has points of variance, shows that each individual mind is a part of a universal force, fused into the universal embrace of the spiritual force of which it is only temporarily individual, that its very existence depends upon its being part of a greater force, that no object can be said to exist without its having a relationship to other objects. It is a part of another whole, which in turn is a localised part of yet another whole, until, finally, the universal whole is comprehended. This is called by Hegel the Absolute, and is certainly a more congenial conception than the intellectual loneliness of the mind according to the Pluralists. This idea of the Oneness of the Universe is the chief inspiration of theologians who call God what for Hegel is the Absolute, and what Schopenhauer terms the Will. But whereas Hegel's idea of the Universal Whole is purely intellectual, Schopenhauer's Will is of the instincts and is ceaselessly and spiritually striving. Bergson, however, sees in his unity of all things an ending change as its main spring, and claims that there is nothing but change,

and, therefore, matter always in process of change has not existence at any given time.

Kant's Idealism challenges Leibnitz and Berkeley's in that there is no evidence that we know our mind any more intimately than we know objects. We are conscious of ourselves only in knowing something not ourselves. He agrees that all knowledge depends upon perception, but insists further that this knowledge is always limited by the fact that we are finite minds controlled by a particular place and time. Thought can extend the range of perception which reveals an object as a part of a whole which stretches indefinitely beyond in space and time. For further detail of Kant's standpoint the reader is referred to his *Critique of Reason*. Scholastic philosophy groups together all these systems under the term 'transcendental idealism,' to which 'immanent idealism' is opposed by the neo-scholastics. Their position is that the intelligibility of things is immanent in them, and through that intelligibility the mind comes into direct contact with the thing.

The word I. has also taken another meaning, of a purely literary nature—the expression of beautiful or optimistic temperament; in its results, it is analogous to the more general æsthetic Ideology of Cousin and Lessing. In this sense, such writers as Foggazzaro, Maeterlinck, Shelley, etc., are idealists, apart from any consideration of their purely philosophical sympathies. See Fichte, JOHANNES; Hegel, GEORG WILHELM; SPINOZA, BARUCH; etc.

See E. Caird, *Hegel*, 1907; H. Bergson, *Philosophy of Change*, 1911; C. E. M. Joad, *Mind and Matter*, 1925; W. R. Inge, *Personal Idealism and Musicism*, 1921; E. G. Braham, *Ourselves and Reality: Personality in British and American Idealism from the time of T. H. Green*, 1930; J. H. Muirhead, *The Platonic Tradition in Anglo-Saxon Philosophy: Studies in the History of Idealism in England and America*, 1931; G. W. Cunningham, *Idealistic Argument in Recent Philosophy*, 1933; A. Liebert, *Die Krisis des Idealismus*, 1936; H. N. Cross, *Idealism and Realism*, 1915.

**Identity**, term with various connotations according as it relates to questions of logic or of metaphysics. The logical law of I. is usually expressed by the formula  $A = A$ , or  $A$  is  $A$ . It is a necessary law of self-conscious thought, being, in fact, merely the positive expression of the law of contradiction, which states that a judgment cannot be true and untrue at various times, and that the same attribute cannot at the same time be affirmed and denied of the same subject. Without such a law no thinking would be possible. The philosophical question of I. is concerned largely with the various ways in which I. can be predicated, and to the exact connotation of the term. The question as to whether or not I. excludes difference is an important one. Many have held that, so far from excluding difference, it actually implies it; in other



words, that I is not undifferentiated, but differentiated, likeness. The question, however, is one of the conceptions of philosophical atomism (See W. James, *Principles of Psychology*, 1890, and B. Bosanquet, *Lectures and Addresses*, 1889.) The question of personal I that is to say, of 'the continuity of personal experience in the exercise of intelligent causal energy, the results being associated in memory,' was first brought into prominence by Locke (*Essay*, bk. II, ch. XXV), and soon occupied the attention of Hume and Butler. The fact is that which distinguishes each person from other thinking beings, and with which the preservation of unity is closely bound up. See J. MacCrimmon, *Identity and Reality* 1150.

**Ideograph**, sign or symbol representing an idea. Ideography may be considered as the second stage of true writing (see WRITING). In ideography, the use of signs depicting concrete, natural objects (see PICTOGRAPH) is extended to express similar concrete concepts, and analogous abstract conceptions. In other words, the ideograph represents not so much the thing it shows as the underlying idea associated with this thing. Thus for instance, in carrying out writing (*q.v.*), the symbol depicting the star came to represent also 'sky, heaven,' 'god,' the adjective 'high' and so forth, and the pictograph for 'to stand, to bring.' The name of the object or its action is, however, closely identified with the picture. As a system of writing, ideography consists of definite pictures, conventional and simplified, selected by agreement or custom from the many experimental pictures.

**Ideology** the system of political and social ideas upon which a community or state is based. The I. of primitive communities must be vague, but would seem to have rested on a sense of law or tribe as distinct from present day aborigines. An increased awareness of the importance of the individual began with the Greeks, and for example Aristotle's political philosophy depended upon his belief that 'natural man was man in society' and that only in organised society could he find fulfilment. Man, therefore 'is a political animal.' It is, however, noteworthy that Aristotle had to admit of a class of slaves in order to allow citizens the time to lead 'the good life.' The spread of Christianity emphasised the importance of the individual and at the same time evolved the old Law of Nature into the Law of God as the final standard by which the acts of temporal rulers should be judged. The danger of anarchy on the one hand, or of ecclesiastical domination on the other, was met in practice by the emphasis laid upon the absolute power of the ruler. This, in its turn, was countered by the theory of the Social Contract as the basis of security, which, however unhistorical, became a powerful weapon against authoritarian rule in the hands of John Locke and others. The conflict of modern times has been, basically, between those who conceive of the State merely as a machine for carrying-

out the will of the members of a society, and those who, deriving from Hegel, conceive of the State as an organism greater than the mere sum of its members and possessing a personality, the individual finds full satisfaction in sinking his will into that of 'the State.' To the latter group belong totalitarian systems to the former, democracies. The Communist position is somewhat anomalous, the idea that the State should ultimately 'wither away' would seem to be a denial of Hegelism, whereas in practice, an authoritarian system would seem to result from the identification of the will of the people with one political party.

Idea, *see* CONCEPT.

Idfu, *see* IDOT.

**Idiocy** or mental deficiency or extreme stupidity depending upon malnutrition or disease of the brain occurring either before, or before the evolution of the mental faculties in childhood, while imbecility is generally used to denote a less decided degree of such mental incapacity. Thus Idiocy is from insanity in that one in the former condition never has been sane while one in the latter has. Idiots, vary from the having no power of speech, of caring for themselves, of distinction between two persons with no feelings of love or hatred, pleasure or pain who are usually dwarfed, ugly, and misshapen, and who sometimes cannot even talk, to those who are often beautiful and normally developed physically, but who lack some mental faculty or intelligence, affection or control. The large majority of mentally deficient are, however, physically unfit in some way or another, and are liable to certain diseases, such as consumption, rickets and scrofula. Idiot are not all being incapable of education and perhaps the most wonderful of tides in education within recent years have been found in the methods of dealing with mentally deficient children. Dr Maria Montessori (*q.v.*) first gained fame for her system by its astonishing success among such children. Those who created the system of educating and treating idiots and imbeciles are Herd, Howe and Seguin, the first task which she met almost impossible, and the value of their work and of those still engaged upon it is inestimable. It has been classified into ten divisions, and from these, pathological causes would seem to have much to do with the state, but the general cause has yet to be discovered. Undoubtedly in many cases it is hereditary, and in a genuine marriage may cause it, but only in those cases where the stock is bad. It has been suggested that consumption in parents may cause the state to arise, and it is known that fights to mothers when pregnant sometimes result in the birth of an idiot. On the other hand, it does occur in what otherwise appear to be healthy families. In law idiots and imbeciles are regarded as being irresponsible for their actions. See also CRETINISM. See Dr W. Ireland, *Idiocy and Imbecility*, 1877. J. F. MacCrimmon, *Problems in Dynamic Psychology*, 1921; and W. S. Dawson *Guide to Psychiatry*, 1931.

Idiocy, for legal sense see LUNACY.

**Idiosyncrasy**, converse of antipathy (*q.v.*), being a strong disposition towards certain things.

**Idle**, tn. of the W. Riding of Yorkshire, England, situated near the Aire, 9 m. from Leeds. It manufs. woollen goods. Pop. 7873.

**Ido**, or **Revised Esperanto**, is, as its name implies, the offspring of Esperanto (*q.v.*), the international auxiliary language. The origin of I. is, according to its partisans, to be found in the Delegation for the Adoption of an Auxiliary International Language, founded in 1901. I. does not claim to supersede Esperanto as that tongue superseded Volapük, but merely to simplify, regularise, and improve it. The two chief alterations effected are the doing away with all accented letters and the suppression of a few grammatical rules (*e.g.* accusative case, agreement of the adjective) which the partisans of I. consider unnecessary.

**Idocrase** or **Vesuvian**, mineral consisting essentially of silica (37 to 39 per cent), alumina (13 to 61 per cent), and lime (33 to 37 per cent), together with a small percentage of oxide of iron, magnesia, and water. It occurs in the form of short tetragonal crystals, which show a large number of faces (sp. gr. 3.4, h. 6.5). The mineral has a vitreous lustre and varies in colour from brown to green. It was first found in dolomitic blocks ejected from Vesuvius, but occurs also in granular limestone, serpentine, gneiss, and other metamorphic rocks. The finest specimens come from Siberia, Piedmont, and Norway, and are cut, polished, and sold as chrysolite or jacinth.

**Idolatry** (Gk. *eidolon* and *latreia*, idol-worship), worship paid to images or other objects supposed to be the abode of a superhuman personality. The term is sometimes used generically to denote all forms of worship of visible and concrete, as opposed to unseen, existences, thus including litholatry, pyrolatry, zoolatry, and the like. St. Paul uses it to express worship of false gods, and the whole heathen cultus (see Gal. v. 20: 1 Cor. x. 14: 1 Pet. iv. 3). Regarded by the early church as a degeneration from a higher primeval faith, it has since been shown rather to mark a stage of upward movement and progress in religious growth. While absent among Hottentots, Fuegians, Veddas, Bushmen, and others, I. was extensively practised among the great civilisations of old, by Egyptians, Chaldeans, Indians, Gks., Romans, Mexicans, and Peruvians. Relics of this worship remain in the 'nirgalli' (images of monsters), common outside Chaldean palaces. Into these it was believed that malignant spirits, such as those of disease, would enter. Statues and idols connected with the worship of the dead were common among many peoples. The Maori 'atua,' or ancestral deity, was supposed to enter his carved wooden image on the incantations of a priest, and to deliver oracles. The earliest stages of I. are Naturalism and Animism. Fetichism, a degraded form of the latter, is often the direct antecedent of I. Private and personal idols or

fetiches, like the Heb. teraphim (see Gen. xxxi. 19, 31: 1 Sam. xix. 13), are early adopted; but public, tribal, and national idols are a late development. The human figure came to be the predominant model. Images were probably introduced among Christians in the second century, and are often found in Christian tombs in the Rom. catacombs. In the sixth and seventh centuries abuses crept in. A reaction arose against I. in the E., culminating in Iconoclasm (c. 726). A characteristic of I. is its tendency to revive even after the introduction of purer spiritual ideas. Thus the Israelites were often in danger of relapsing from monotheism (see Exod. xxxii.; 1 Kings xi. 3: xii. 24: xiv. 15, 23: xvi. 32). The Rom. Catholic and Gk. Churches still revere images of the Virgin and saints, though of course this subject should hardly be dealt with under I. The Reformers and Calvinists repudiated this practice, but Luther allowed images as possibly helpful to devotion. See also **IMAG-WORSHIP**; **RELIGION**. See the works of J. Voss, A. van Dale, H. Spencer, Sir R. Taylor, T. Waltz, V. Schultze, A. Réville. See also K. Kraus, *Roma Sotterranea*, 1879; G. D. Alviella, 'Les Origines de l'Idolatrie' in *Revue de l'Histoire des Religions*, xii, 1885; J. Lippert, *Culturgeschichte*, 1886; A. B. Labbock, *Origin of Civilisation*, 1902; J. Hastings, *Encyclopaedia of Religion and Ethics* (vol. vii.), 1914.

**Idomeneus**, son of Deucalion, king of Crete, and grandson of Minos. As king of Crete, he led eighty ships to Troy and played a leading part in the battle, being described in Homer's *Iliad* as one of the mightiest of the heroes. In later writers he is represented as vowing in a storm, provided he arrived safe home, to sacrifice to Poseidon whatever he first met on landing. The victim was his son, whom he accordingly sacrificed, and his subjects, in consequence, drove him forth. He wandered in Calabria and Italy, where he established a shrine of Apollo near Colophon when he died and was buried.

**Idria**, or **Idrija**, tn. and com. of Istria, Yugoslavia, 26 m. N.N.W. of Trieste. There are quicksilver mines in the vicinity which have been worked since the sixteenth century and lace manuf. Pop. 10,500.

**Idris**, mythical figure in Welsh tradition who had his rock-hewn chair on the summit of Cader Idris. He was supposed to have the power of conferring poetic inspiration, and of inducing madness or death.

**Idris**, see **ENOCH**.

**Idrisi**, Abu Abdallah Mohammed El-, see **EDIRI**.

**Idumaea**, see **EDOM**.

**Idun**, or **Iduna**, name of a goddess in Norse mythology. She was the daughter of the dwarf Svald, and became the wife of Braut. She personified the reviving year, being imprisoned in the nether world by Thiazi (winter), from whom she escaped, and appeared again in the shape of a bird in the springtime.

**Idyll** (Lat. *idyllum*, a little image), word used to describe a species of poem repre-

senting simple scenes of a pastoral life, not, however, exclusively used for poems of a pastoral character. Tennyson, for example, in his *Idylls of the King*, presents an epic style and treatment, the incidents portrayed being of a romantic and tragic nature. Theocritus, too, in his *Idyllia* (thirty in number), wrote less than half in the pastoral form.

Ieper, see YPRES.

Ierne, see HIBERNIA.

Ierugena, Johannes Scotus, see ERI-GENA.

Iesi, or Jesi, tn. of Italy in the prov. of Ancona, situated on the l. b. of the Esino, 17 m. S.W. of Ancona. It is noted as the bp. of the Emperor Frederick II., and possesses a fine cathedral. Pop. about 16,000.

If, islet of Bouches-du-Rhône dept., off the S. coast of France, opposite Marseilles in the gulf of Lyons. It was once covered with yew ('ifs'). Its fortress, Chateau d'If, built by Francis I. (1529), is famous. It was used as a state prison later, Mirabeau and Philippe Egalité being imprisoned there. In Dumas's *Count of Monte Cristo* the hero is confined there.

Ifland, August William (1759-1814), Ger. actor and dramatist, b. at Hanover, and educated for the ministry. In 1796 he became director of the Berlin National Theatre, and subsequently superintendent of all the royal theatres, the Berlin stage reaching its highest point under his management. Among the best of I.'s plays are (titles trans.), *The Bachelors* (1799), *The Foresters* (1799), *The Lawyers* (1799), *The Nephews* (1800), *Crime from Ambition* (1800), and *Conscience*. His dramatic criticism is to be found in his *Almanach für Theater und Theaterfreunde* (1815), and his *Theorie der Schauspielkunst* (1815). See his collected dramatic works, 1844; Duncker (ed.) *Ifland in seinen Schriften*, 1859, and *Ifland's Berliner Theaterleitung*, 1896, and monograph by E. Kliever, 1937.

Ifni, seaport tn. and dist. of W. Morocco, Africa, 35 m. from Azulon, opposite the Canary Is., ceded to Spain by Morocco in 1860. By the Franco-Sp. agreement of 1912 it extends along the W. coast of the N. of Wadi Draa and a distance of 15 m. inland from the coast. Pop. chiefly engaged in fishing and cultivating garden produce. Area 965 sq. m.; pop. 20,000.

Ifrut, Ifreet, Afrut, or Afreet, in Arabic folklore, ogre of an evil disposition.

Igel, vil. of Rhineland, Germany, 3 m. S.W. of Trier. It contains the celebrated I. obelisk, or Heidenthurm, a sandstone monument 75 ft. high, one of the most remarkable Rom. relics N. of the Alps. This was a funeral monument of the Secundina family. Pop. 700.

Iggdrasil, see YGGDRASIL.

Iglau (Jihlava), tn. on the Bohemian frontier of Moravia, Czechoslovakia, 123 m. N.N.W. of Vienna, on the Iglawa. Manufs. include tobacco, plush, woollens, cloth, glass, and pottery. It was a mining centre in the Middle Ages, silver being worked from the eighth century. A treaty ending the struggle between Sigismund and the Hussites was signed here (1436).

In 1805 the Austrians defeated the Bavarians here. Pop. 23,400.

Iglesias, tn. and episcopal see of Cagliari prov., W. Sardinia, Italy, 32 m. from Cagliari. The chief mining centre of Sardinia, it has zinc and lead mines. There is a cathedral (1285), an old castle, and a bishop's palace. The tn. is partly surrounded by walls, and its citadel dates from 1325. Malaria is prevalent. Pop. 21,800.

Iglesias de la Casa, José (1748-91), Sp. poet, a native of Salamanca. He first wrote satiric ballads, epigrams, and 'letrillas' directed against contemporary society and morals. He entered the church (1783), becoming priest of Larodrigo, and then of Carbayosa de la Sagrada. His later works contained much theological discussion. I. is often ranked with Quevedo (1580-1615). His *Collected Poems* first appeared in 1798. In 1802 some of them were put on the Index. See G. Ticknor, *History of Spanish Literature*, 1849; H. W. Longfellow, *Poets and Poetry of Europe*, 1819; C. Real de la Iruya, *Iglesias in Salamanca*, 1931.

Iglo, tn. of Hungary, in the co. of Zips, situated on the Hernád. It has iron and copper smelting works, and a trade in linen and flax. Pop. 9000.

Igloo, Fekimo hut. Built for temporary habitation during the winter season, the huts are frequently constructed merely of blocks of ice piled high in a dome.

Iglolik, small is. of N. Canada, situated in the Arctic Ocean, in Fury and Hecla Strait, in lat. 69° 21' N., and long. 81° 53' W.

Ignatiev, Nikolai Pavlovitch (1832-1906) Russian general and diplomatist, b. in St. Petersburg, and the son of Gen. Paul I., a favourite officer of Alexander II. He was educated in the corps of pages and exchanged from the military to the diplomatic service in 1856, having served in the Crimean War and been made a colonel and major-general. In 1858 he was made diplomatic attaché to Gen. Muraviev, governor of E. Siberia, and negotiated the treaty of Alghun with China, by which the region of the Amur came into the possession of Russia. Two years later, he was sent as plenipotentiary to Peking. In 1863 he was placed at the head of the Asiatic dept. of the ministry of foreign affairs, and made adjutant-general of the Czar. He was an active agent at the outbreak of the Russo-Turkish War in 1877, and the treaty of Stefano was largely his work. At the close of the war he fell into disfavour and retired from office. On the accession of Alexander III., however, he was made minister of the interior, but was dismissed in 1882 for permitting the persecution of the Jews.

Ignatius, bishop of Antioch, one of the Apostolic Fathers, perhaps the most remarkable of all the figures of the century immediately following the Apostles. Very little, however, is known about his life, and about his birth and parentage nothing is known. A late tradition says that he was the little child whom Our Lord placed as a pattern in the midst of the disciples. More reliance is to be placed on the earlier

tradition which speaks of him as the disciple of St. John the Apostle. Eusebius also tells us that he was the second successor of St. Peter in the see of Antioch. Later traditions are so untrustworthy that we are forced to rely entirely on the internal evidence of the letters which I. wrote. These were sent from various cities at which the saint stopped as he was being hurried to Rome for martyrdom (A.D. 115-117) during a persecution which arose at Antioch in the reign of Trajan. The letters themselves present a most difficult critical problem, which now, however, after the labours of Zahn, Lightfoot, Harnack, and others, seems to have reached a satisfactory solution. The difficulty is brought about by the fact that three widely-different recensions of the letters exist. The short or Vossian recension consists of seven letters, the number which Eusebius ascribes to I. They are written to the Ephesians, Magnesians, Trallians, Romans, Philadelphians, Smyrnaeans, and to Polycarp, respectively. This recension occurs in Gk., Lat., Armenian, and fragments in Syriac and Coptic forms. The long recension contains these seven in an expanded form and sev. others in addition, six in the Gk. form, and ten in the Lat. Finally there is the Syriac or Curetonian recension, containing only three epistles, viz. those to the Romans, the Ephesians, and Polycarp, all in a shortened form. Much controversy has taken place as to which of these recensions was to be regarded as the genuine work of I. The arguments against the long recension are conclusive, and scholars are now generally united in upholding the claims of the Vossian recension. The Syriac recension is to be regarded as an abbreviated ed. of the seven epistles, and not as the original and unexpanded form. The letters are directed against Gnostic and Docetic heresy, laying great stress on the duty of adherence to episcopal authority, and the essential nature of the episcopal office. See works by T. Zahn, J. Lightfoot, F. Funk, A. Harnack; M. de Wulf, *History of Medieval Philosophy* (trans. by E. C. Mossner), 1926; H. W. Bartsch, *Gnostisches Judentum und Gemeinde tradition bei Ignatius von Antioch*, 1940.

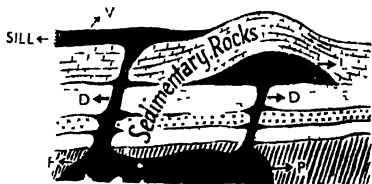
**Ignatius, Father** (1837-1908), name, as a religious, of Joseph Leicester Lyue, an Englishman who devoted his life to an attempt to revive the Benedictine life in the Church of England. In 1870 he founded a community at Llanthony Abbey, near Abergavenny, but his attempt having been made without any reference to eccles. authority, it came to an end after his death, the property passing to the Benedictine community of Caldey, of which the greater number succeeded in 1913 to the Church of Rome. F. I. was a great preacher, and his mission sermons in London attracted large numbers.

**Ignatius, Saint** (c. 800-878), Patriarch of Constantinople, was the son of Michael I., emperor of the E. He was compelled to enter a monastery, whence he rose to the patriarchate through the favour of the

Empress Theodora. He was an opponent of the Iconoclasts. The influence of his brother Bardas, whom he had excommunicated, led to his being forced to abdicate in 866, but he was restored in the following year.

**Ignatius de Loyola**, see LOYOLA, IGNATIUS DE, and JESUITS.

**Igneous Rocks** include all those which at some time in their hist. have been in a molten condition. Their differing physical characters, which are largely dependent on their rate of cooling, suggest one form of classification into: (a) Volcanic, in which the rate of cooling has been comparatively rapid, so that the crystallisation is by no means perfect, hence this kind contains large quantities of glassy material; (b) plutonic, in which the cooling has been extremely slow, so that the crystallisation is almost perfect, hence there is little, if any, glassy material present. Between these two in nature there is seldom any strongly marked line of separation, for they merge into one another, and the dyke rocks may be defined as of the intermediate type. In the diagram, P represents the deep-seated



plutonic rocks. D the intrusive dyke rocks, later in age than the rocks they penetrate, and forming dome-shaped laccoliths. L in certain areas. V indicates the volcanic lavas, effusive or eruptive rocks. These form sills which are contemporaneous with the sedimentary rocks they overlie. Examples of such sills occur in the N.W. tets. of N. America, in Iceland, the Faroe Is., the Deccan, Abyssinia, and fragments in Ireland and Scotland. Large shapeless masses (blosses) of plutonic rocks become exposed through the denudation of overlying rocks. These outstanding masses may be sev. m. in diameter. Other prominent rock-masses may be left by the weathering removal of surrounding material from the solidified lava in the neck of a volcano. Many such necks or cores remain, e.g. in Scotland, as relics of past volcanic activity. I. R. are chiefly composed of oxides, as silica, alumina, iron oxide, lime, magnesia, etc.; in consequence a frequent classification of such rocks depends on their chemical composition and more particularly on the percentage of silica present. A brief summary of such a grouping follows:

1. **Acid igneous rocks**, containing from 66 to 80 per cent. of silica. The plutonic example is granite, a holocrystalline rock

containing the essential minerals, quartz, feldspar, and mica (generally muscovite). The glassy, rapidly-cooled, volcanic representative is obsidian, which resembles bottle glass in appearance. The hemi-crystalline variety is called rhyolite. The two latter have roughly the same chemical composition as that of granite.

2. *Sub-acid intermediate rocks*, containing from 60 to 66 per cent of silica. The essential constituents of these are orthoclase and hornblende, the latter of which may be replaced partly by augite or mica. Representatives in the same order as those of the first group are syenite, trachytic pumice, or trachyte glass, and trachyte. The trachytes bear much the same relation to the syenites that the rhyolites do to the granites.

3. *Sub-basic intermediate rocks*, containing from 55 to 60 per cent. of silica. The essential mineral constituents are plagioclasic feldspar (usually oligoclase or labradorite) and hornblende, which may be replaced by augite or mica as in the case of the syenites. Representatives in order are diorite, andesite glass, and andesites. The andesites occur in enormous masses in the Andes Mts., and are perhaps the most abundantly found of all the I. R.

4. *Basic rocks*, containing from 45 to 55 per cent of silica, i.e. the acid-forming oxide is less in amount than the basic oxides. In this case the essential mineral constituents are plagioclasic feldspar (usually labradorite or anorthite), augite, and olivine. Magnetite is always present as an accessory. Gabbro is the holocrystalline plutonic representative. The glassy example is tachyte or basalt glass, while the hemi-crystalline rock is basalt. In this group rocks called dolerites are intermediate in position between the gabbros and basalts.

5. *Ultra-basic rocks*, containing only 35 to 45 per cent of silica, are very rich in olivine, which readily decomposes and causes the rocks to change quickly into some variety of the serpentines. Members of this class of ultra-basic rocks are also called Peridotites, e.g. Pierites, Chertolites, and Dunite. Chemical analysis is, of course, impossible in the field, so that if it be necessary to classify the rock on the spot, it is usual to adopt some form of mineralogical grouping. Sov. systems have been proposed; one which is worked out very fully by J. J. Harris Teall is described in his *British Petrography* (1888); a very brief summary of crystalline rocks would include: (a) Rocks of ferro-magnesian minerals, e.g. olivine, augite, hornblende, biotite. Feldspar is not present as an essential. (b) Rocks in which the feldspar is essentially plagioclasic. (c) Rocks in which orthoclase is abundant. (d) Rocks containing nepheline and (or) leucite, both of which are absent in classes (b) and (c). (e) Other rocks not in the above four classes. Special classes are reserved for vitreous or glassy rocks, and also for fragmental volcanic rocks which may vary in texture from fine dust to large masses of scoriae.

*Distribution of igneous rocks.* The

older I. R. occupy but a small aliquot part of the whole surface of the earth, nor are the existing masses of great extent. This will be more readily understood when it is remembered that the exposure of plutonic rocks can only be brought about by immense earth movements and fractures, or by denudation removing the overlying strata so that the crystalline rocks may be exposed. In the case of the younger I. R. of the lava and fragmental types, these are being produced at the present day along the lines of volcanic activity, as, for example, in the Pacific girdle. Regions of extinct volcanoes also contain varying amounts of eruptive rocks, as in the case of the Auvergne plateau of France and the Eifel mts. of W. Germany. By reference to a geological map the reader will readily identify the very numerous and widely scattered small masses of these rocks which exist on the surface of the globe.

*Disintegration of igneous rocks.*—Notwithstanding the hardness and compact character of these rocks, they are particularly subject to the weathering agencies. Chemical and mechanical analysis proves that all the materials building up the sedimentary rocks can be produced by the disintegration of the I. R., and, undoubtedly, many of the sedimentary rocks have been formed from such disintegration products. Chemical action takes place between the carbon dioxide of the atmosphere and certain compound silicates which results in the production of soluble carbonates and free silica, which latter may also be in a soluble form. Rain-water removes these products, and a mechanical disintegration follows. In the case of granite, the quartz is a simple compound, insoluble and consequently but little altered; on the breaking up of the granitic mass it is generally removed bodily by weathering agencies, and re-deposited to give a series of siliceous sedimentary rocks, e.g. sands, gravels, sandstones. The feldspar is subject to the chemical changes outlined above, which is termed kaolinisation on account of the product kaolin or China clay which is composed of hydrated aluminium silicate separated from the feldspar. The decomposition of the feldspar results in the production of argillaceous sedimentary deposits, e.g. muds, clays, shales, together with soluble silica, which may be extracted by plants and animals, e.g. diatoms and radiolaria, to build up their framework; the resulting carbonate in each case will be dependent on the particular feldspar which is decomposing; anorthite will yield calcium carbonate, which in its turn may be extracted from its solution, and deposited to form new strata of corals, chalk, limestone, etc. The mica suffers but little decomposition, and is usually re-deposited almost unaltered.

*Ignis Fatuus* (Lat., foolish fire), luminous appearance occasionally seen in marshy places and churchyards. It is usually visible shortly after sunset in autumn, and has been recorded in many countries. The light, which resembles a flame, is seldom pure white, and may be

red, green, blue, or yellow. Accounts differ greatly: some observers speak of it as being fixed and others as moving. Experiments have proved that it is not due to true combustion. Theories explaining its occurrence have been in turn discredited. These include the burning of methane or marsh gas, phosphuretted hydrogen, and phosphorescent vapour. Many local names are given to the phenomenon, e.g. Will o the Wisp, Jack a Lantern etc. and its manifestations have given rise to a wealth of story and legend.

**Ignoramus** (1) Word formerly written on a bill by a grand jury (see *IGNORAMUS JURIS*) to signify that they ignored the bill on the ground that there was not sufficient evidence to authorise them in finding a 'true bill'. Later they indorsed the bill in the words 'Not found', 'No Bill' or with similar words. (2) Ignorant person, especially an ignorant pretender to knowledge. In this connection the word was probably an extension of its appropriate legal meaning. Many writers, notably Beaumont and Carlyle, are fond of using the word in a personified sense. Dryden in his *Duke of Guise* puns on the legal sense, thus: 'Let ignoramus juries find no traitors, and ignoramus poets scribble satires'. The idea of Dryden's satire called *The Medal* which appeared in 1682, is said to have been suggested to him by Charles II. as a reply to the striking of a medal in honour of the 1 of the grand jury in throwing out a bill against Shaftesbury, always a butt of the poet laureate.

**Ignorance, in law** It is a legal maxim that 1 of a law cannot excuse for breaking it, however praiseworthy the motives of the lawbreaker. This maxim is said to rest on the legal presumption that every man knows the law. It would be truer to say that grounds of public policy have dictated the necessity of adhering to such a maxim. 1 of fact is different. For example, if a man whose wife was living left her and married another woman under the impression that it was lawful in certain circumstances to have two wives, he would be guilty of bigamy, but if he did so under the impression that his first wife was dead, he would in all probability be excused. There are however dicta to the effect that the rule is not universally applicable at all events where no crime has been committed or damage inflicted, and that a judge in a court of equity will be influenced by a plea of 1.

**Ignorantines**, name of a religious fraternity in the Rom. Catholic Church usually known as the Christian Brother, founded at Rheims (1679) its aim being the gratuitous instruction of poor children in both sacred and secular learning. It was organised (1683) by Jean Baptiste de la Salle. The order has now spread over the whole world. The brethren take vows of chastity, obedience, and poverty, but do not enter holy orders. Their official title is the 'Brothers of the Christian Schools'.

**Igualada**, tn. of Barcelona prov., Spain, on the Noya, 34 m. N.W. of Barcelona. Pop. 10,500.

**Iguana**, genus of tropical Amer. lizards, of the family Iguanidae, comprising about fifty genera and 100 species. Nearly all the genera belong to the New World, occurring as far S. as Patagonia and in a northward direction as far as California and Brit. Columbia and most of them are arboreal though some live on the surface of the sand and stones of the desert. They



IGUANA

I are known mostly from the Wealden are characterised by the peculiar form of their teeth which are round and blade like at the root with serrated edges towards the tip. One of the most common species is the *Iguana tuberculata* with a large dewlap and a high dorsal fringed ridge. Their prevailing colour is green and they differ greatly in size from a few inches to six ft in length. During the warm hrs., they bask on the limbs of trees, when they are easily caught by the natives by means of a net so thrown over the head that the flesh being steamed as food. 1 of the same family belongs to the bushy, and the hind foot. See *ILLUSTRATED GIDOW, Amphibia and Reptiles*, 1901.

**Iguanodon** (*Iguanodon* and *Gekkonodon*) genus of ornithomimid dinosaurs, found in the Jurassic and Lower Cretaceous of Europe. The 1 was described by Mantell in 1825 from specimens found in Kent, England. It was from 1 to 20 ft long, the head large and narrow and the massive body terminated in a long and very strong tail. The forelimbs were small and adapted for grasping the leaves and branches of plants on which it fed. All the bones were hollow. The structure of the skeleton is altogether very remarkable. The front parts of both upper and lower jaws are without teeth, and suggest a hollow, beaklike arrangement. The 1 walked on its hind legs, and sat on a tripod formed by these and its tail after the manner of the kangaroo. Its forefeet had four toes and a spur, and were much shorter than the three-toed hind limbs. It lived in great numbers in the swampy regions of England and Belgium and other parts of Europe, during the Jurassic period. Sev. species of the

and Purbeck beds. Twenty-nine fossil skeletons of the reptile were found at one time in Upper Jurassic sandstones of the coal regions at Bernisart in Belgium. See G. A. Mantell, *Petrifactions and their Teachings*, 1851; A. Woodward, *Outlines of Vertebrate Paleontology for Students of Zoology*, 1898; H. N. Hutchinson, *Extinct Monsters*, 1892; Sir R. Owen, *Fossil Reptiles* (4 vols.), 1849-81, etc.

**Iguassú**, ter. of Brazil, in 1913, a belt of land around Brazil, part of sev. states, was taken over by the Federal Gov. and placed under the direct administration of the President. I., which had a pop. of 109,500, and faced the Misiones prov. of Argentina, was restored in 1916 to its constituent states.

**Iguvine Tables**, see ECGURINE.

**Ihering, Rudolf von**, see JHERING.

**Ilithyia**, see ILITHYIA.

**Ijmuiden**, see YMUIDEN.

**IJssel**, or **Yssel** (anc. **Isala**): (1) Riv. of Holland, Gelderland, and Overijssel provs., the northernmost arm of the Rhine delta, leaving the mainstream near Arnhem and flowing N. into the IJssel Meer (Zuyder Zee) (E.), past Zutphen, Deventer, Zwolle, and Kampen. The upper part was formerly a Rom. canal made (c. 12 B.C.) to unit. the Rhine with the Oude IJssel, which joins the Nieuwe at Doosburg. Length about 70 m., all navigable. There was stubborn fighting on the riv. in 1945, Deventer falling to the Canadian and Brit. forces on April 10 and Zutphen soon afterwards. By the 21st the whole area of N. Holland had been cleared of Gers. as far as the E. shore of the IJssel Meer. (2) Riv. of Utrecht and S. Holland provs., connected by canal at Utrecht with the Oude Rijn, and entering the Nieuwe Maas 3 m. above Rotterdam. **IJsselmeer**, see HOLLAND and ZUYDERZEE.

**IJsselmonde**, or **Ysselmonde**, is. of Holland, in the prov. of S. Holland, between two branches of the Maas and the Oude and Nieuwe Maas, opposite Rotterdam. It is 15 m. long by 5 m. broad. There is a tn. of the name on the is.

**Iizer**, see YSER.

**Ikhmin**, see AKHMIN.

**Ikhmaton**, see AKHMATON.

**Iki**, is. belonging to Japan, lying off the N.W. coast of Kiusiu. There is a harbour at Gionoura in the S.W. Area 57 sq. m.

**Ikuo**, tn. of Iondo, Japan, 3 m. N.W. of Kobé. Its silver mines, the second in size in Japan, are worked by the gov.

**I.**, an administrative div. of Turkey. In 1921 the country was divided into I. (now numbering 63), subdivided into Ilce, and further into Bucak. Each I. has an elective council, and at its head a Vall representing the Gov. The Bucak is an autonomous entity, the Ilce being merely a grouping of these for some general administrative purposes.

**Ilagan**, cap. of the prov. of Isabela, Luzon, Philippine Is., about 200 m. N.N.E. of Manila. It is in a great tobacco-growing dist. Pop. 23,300.

**Ichester**, mrkt. tn. in the S. parli. div. of Somersetshire, England, on the R. Yevo, 5 m. N.W. of Yeovil. It is supposed to be the Ischalis of Ptolemy; was an import-

ant Rom. station and a flourishing Saxon tn. Lytes Cary, a fine fourteenth-century house near I., is owned by the National Trust. Pop. 500.

**Ildefonso, Saint** (807-67), Sp. prelate and theologian, b. at Toledo: was a pupil of St. Isidore, became abbot of Agali, and attended the ninth council of Toledo in 653. In 657 he succeeded his uncle Eugenius as archbishop of Toledo. He added fourteen lives to St. Isidore's *De Viris Illustribus*, wrote sev. theological works, and was responsible for the unification of the Sp. liturgy.

**Ile de Bourbon**, see RÉUNION.

**Ile-de-France**: (1) prov. of France, forming a kind of is. bounded by the Rs. Seine, Marne, Beuvronne, Thèze, and Oise, and with Paris as its cap. Under the Revolution redistribution of provs. it was divided into the dept. of the Seine with the greater part of Seine-et-Oise, Seine-et-Marne, Oise and Aisne, and a small part of Loiret and Nièvre. It is a prov. of forests and plains, fertile and prosperous, with carefully tended mrkt. gardens and orchards. Its prin. industries are wine and the sugar beetroot. In the middle of the ninth century I. was made a dukedom and its second duke, Odo, became king of France in 888, and was the ancestor of Hugh Capet. I. was the former name of Mauritius (q.v.). (2), or **Ile d'Orléans**, is. on the E. coast of Greenland, for the greater part covered with glaciers.

**Ile-du-Diable**, one of the Îles du Salut off the coast of Fr. Guiana, S. America, on which Capt. Dreyfus (q.v.) was imprisoned in 1891.

**Ilerda**, cap. of the Ilgeretes in Hispania Tarraconensis. It stood upon an eminence on the r. b. of the R. Sicoris. It was used by the legates of Pompey as their base against Caesar in the first year of the Civil war (49 B.C.).

**Ilets**, tn. of Orenburg, Soviet Russia, near the confluence of the Ilek with the Ural. It is famous for its mud- and brine baths and koumiss cures. Pop. 7000.

**Ileum**, lower part of the small intestine. The small intestine is a tube about 23 ft. long, the first 10 or 11 m. form the duodenum, the next 9 ft. form the jejunum, and the remainder is the I. There is no definite line of div. between the two main portions, but the jejunum occupies the upper and left part of the abdomen, while the I. occupies the lower and right. It terminates in the ileocecal valve leading to the large intestine.

**Ilex**, cosmopolitan genus of plants in the order Aquifoliales, which consists of between one and two hundred species. *I. aquifolium*, the common holly, is found chiefly in Central Europe; it is valued as an ornamental tree and for its fine-grained, heavy, compact timber; the berries are poisonous and have violent emetic effects. *I. Paraguayensis*, the maté plant, is valued for its leaves, which are dried and used like common tea, under the name of Paraguay tea. The I. so frequently mentioned by classical authors is *Quercus Ilex*, the holm- or holly-oak, a

species of *Fagaceae* found round the Mediterranean.

**Ilford**, (1) (Great), par. and bor. on the Roding in S.W. Essex, 7 m. E.N.E. of London. The hospital of St. Mary and St. Thomas originally founded in the twelfth century as a leper hospital, is now composed of almshouses and a chapel. It has photographic material factories and paper mills. Pop. 130,600. (2) Little I. on the opposite bank of the Roding. Pop. about 15,000.

**Ilfracombe**, seaport, mkt. tn., and popular watering place in N. Devon, England, 11 m. N.N.W. of Barnstaple. The beauty of its scenery and the temperate climate make it a favourite resort both in winter and summer. It has steadily grown in importance of late years and constant improvements have been made,

Balkash, into which it falls by seven months after a total course of 750 m. Its chief tribes are the Kaskh, Chuk, and Charvin. Its valley is rich in coal, gold, and silver. See also KILIA.

**Iliad**, see under **ILIC POETRY**. **HOMER**.

**Iliamna**, volcano in Alaska, N. America, at the head of the Alaska Peninsula. W. of Cook Inlet. It was in eruption in 1901 and 1902. Alt. 12,000 ft.

**Iligan Bay**, on the N. coast of Mindanao, Philippine Is. The R. Iligan flows into it at the S.W. corner and here lies the town of Iligan with a large trade in rice, spices, and hemp. Pop. 6000.

**Ilion**, tn. of Herkimer co. New York, U.S.A. on the S. bank of the Mohawk R., 12 m. S.W. of Utica. Its chief industry is the manufacture of Remington typewriters. Pop. 4900.



British waters

ILFRACOMBE

such as large semi-artificial bathing pools, etc. It is connected by a good steam service with all the sea-side towns of interest in S. Wales and the neighbouring coasts. In the fourteenth century it was a place of importance and supplied six ships and ninety six men for the siege of Calais (1347). It was besieged twice during the Civil War. In 1782 a large timber vessel belonging to the Franco-Spanish fleet taken by Rodney was wrecked in Rappart Cove, and at various times since gold and silver pieces have been washed ashore. In 1797 four Irish ships entered the harbour and sank all the vessels lying there. It has declined as a port since its prosperous days in the fourteenth century. Pop. (1931) 9200.

**Ilhavo**, seaport in the dist. of Aveiro, Portugal, 40 m. S. of Oporto. Its chief industry is fishing, but there are famous glass and porcelain works at Vista Alegre. Salt is also exported. Pop. about 13,000.

**Il**, one of the chief rivers of Russian Central Asia in the Issyk-kul Itation of the Kirghiz S.S.R. It rises at an altitude of 11,600 ft. on the W. slopes of Mt. Kashtatur, E. of Lake Issyk-kul, and flows in a twisted course past Kälja in Sinkiang, through the Frans Ili, Ala-tau, and Borok-boro Mts., to Ilek and thence to Lake

**Iliya**, Battle of, scene of Hannibal's defeat on the Metaurus, 207 B.C. when he was trying to bring Hannibal reinforcements.

**Iliussus**, tributary of Attica flowing into the city near the Lycabettus. It was immortalised for its beauty by Plato in *Phaedrus*. But the beauty has vanished and the country become barren and sun-scorched.

**Ilium**, see **ILIOY**.

**Ilkeston**, mkt. tn. and municipal bor. of Derbyshire, England, 9 m. N.E. of Derby. It is on a hill commanding the fine valley of the Erewash. It manufactures hosiery lace and earthenware. Coal and iron ore found in the neighbourhood, and an alkaline mineral spring. Pop. 31,100.

**Ilkley**, health resort in the W. Riding of Yorkshire, England, on the R. Wharfe, 16 m. N.W. of Leeds. There are sev. hydropathic establishments. It was an ancient Roman station and possesses three curious Saxon crosses. Bolton Abbey (q.v.) is 5 m. N.W. Pop. 9700.

**Ilampu**, or Sorata, peak in the Cordillera Real, a mt. range of Bolivia. Alt. 21,270 ft.

**Illawarra**, dist. of New S. Wales, Australia, extending from a point 33 m. S. of Sydney, along the coast southwards



for 40 m. to Shoalhaven. Industries: dairy produce, collieries. The I. Lake is a salt lagoon where fish are plentiful and fowl abundant. Pop. 12,900.

**Illecillewaet**, celebrated glacier in Brit. Columbia, lying near Glacier House, on the Canadian Pacific Railway, having its origin in the snows and ice of Sir Donald Mt. It is in a condition of recession.

**Ille-et-Vilaine**, maritime dept. of N.W. France, bordering Mt. St. Michel Bay and the Eng. Channel. It formed part of the old prov. of Brittany, and is now bounded W. by the depts. of Côtes-du-Nord and Morbihan, S. by Loire-Inférieure, E. and N.E. by Mayenne and Manche. The Rr. Ille and Vilaine flow from N. and E., uniting at Rennes, the cap. The surface is mostly flat, with forests and marshes in the N. The former forest of Brocéliande in the W. is now represented by the

in some legal systems a marriage would be illegal where the spouses had not first obtained the consent of their parents; while in France, again, the dowry system, lending as it does to the *mariage de convenance*, tends equally surely to a morganatic union. Some have supposed that I. is more rampant among the hot-blooded races of the S. of Europe and S. America, or in other warm climates. But there is little statistical warranty for the assumption, although, so far as mere figures are concerned, two observations are material. First, that in most of those countries whose legal systems are based upon the Civil Law (*q.v.*), subsequent marriage, or even a less formal act, will legitimate offspring otherwise illegitimate; and, secondly, statistics of any reliable kind are not forthcoming for the majority of Oriental races.

Year	Total Births	Illegitimate	Percentage of Illegitimates
ENGLAND AND WALES			
1935 . .	598,756	25,105	4.1
1936 . .	605,292	24,895	4.1
1937 . .	610,557	25,341	4.1
1944 . .	715,318	52,385	7.0
1946 . .	820,719	53,919	6.5
SCOTLAND			
1938 . .	88,627	5,449	6.1
1939 . .	86,899	5,192	5.9
1940 . .	86,389	5,084	5.8
1943 . .	94,682	7,173	7.5
1947 . .	113,117	6,311	5.5

far less extensive forest of Paimpont. The Marsh of Dol is a fertile region once engulfed by the sea. Grain (wheat and barley), tobacco, flax, and potatoes are among the chief crops. Honey, and fruit are plentiful: cider is produced, the amount being equal to nearly 20 per cent. of the total Fr. production. The oyster of Cancale are exported. The chief minerals are granite (round Fougères), slate and argentiferous galena at Bruz. St. Servan and St. Malo are the chief ports. Area 2697 sq. m. Pop. 578,200.

**Illegitimacy**, status of a child born out of wedlock. The status is especially important in all legal systems from the consequences entailed by it in regard to the right to succeed to property. Bastardy in England and Wales has, however, lost much of the stigma traditionally attached to it by reason of the Legitimacy Act, 1926, which legitimates the offspring of unmarried parents under specified conditions (see further under LEGITIMACY, LEGITIMATION).

The greater the number of artificial hindrances to marriage, whether economic or social, the greater, as a rule, will be the I. In some countries, like France, the term of military service must be completed before a man may marry. Again,

In the census period 1871-1901 the percentage of illegitimates in the U.K. was 5.6, and in Scotland, 9.1. For the succeeding census periods these rates have averaged 4.1 and 7.3 respectively. The figures for recent years, in which statistics are available, are shown above.

In Christian nations there can be no doubt that the Christian religion acts powerfully as a deterrent of I., (*e.g.* in Ireland, where the rate as long ago as 1870 was only 2.7) and that chastity is intimately involved in the age-long institution of monogamy. Whether religion or utilitarian considerations had more to do with the difference between the status of legitimate and illegitimate offspring is open to doubt. Most Aryan nations acknowledged illegitimate children as part of their families, and gave them a right to share in the patrimony, though in the Rom. law of succession illegitimate children were in a less favourable position in this respect than legitimate. According to Westermarck, (*Origin and Development of the Moral Ideas*), it was nothing less than monogamy that gradually deprived the bastard of nearly all proprietary rights, and led up to the universal maxim that the bastard was *filius nullius* and *filius populi* (the son of no man, or the son of

the people). Christianity may well have done no more than throw the axis of religion over what had long been a social commonplace; but the stigma it attached to infidelity to the marriage vow, and its doctrine that monogamous marriage was the only form of marriage that could exculpate intercourse, may well have gone far to stereotype the unenviable position of the bastard. Although eccles. ideas of marriage and legitimacy were slow in permeating the ruder Celtic nations, they soon induced the A.-S. law-giver to deny to the bastard any claim of blood relationship with the *Mægth* or family. Some have even attributed the curious custom of Bor.-Eng. (*q.v.*) to the doubts that were supposed to surround the birth of older

*Illicium*, small genus of Magnoliaceae, flourishes in Asia and America. *I. verum* is the star-anise, which occurs in China and contains an aromatic oil used in flavouring.

Illimani Mountain, one of the loftiest mts. of the Bolivian Andes, in the E. Cordillera Range, S. America.

Illium, supposed metal (atomic number 61) of the rare earth group. Its substance is still doubtful.

Illinois (*Illini*, men), group of N. Amer. Indian tribes of the Algonquin linguistic family. They lived formerly in I. and the adjacent parts of Wisconsin, Iowa, and Missouri. The chief tribes were Cahokia, Peoria, Kaskaskia, Tamaroa, Michigamea, and Mowwagena. As allies of the Fr. they

Country	Year	Total Births	Illegitimate Births	Rate of Illegitimate Births per 1000 births
Australia .	1937	119,131	5,163	43
Belgium .	1946	148,207	5,712	38
Canada .	1946	325,805	13,595	41
Chile .	1932	149,459	54,702	366
Denmark .	1946	96,111	7,592	80
Eire .	1946	67,547	2,161	32
England & Wales	1946	820,719	53,919	65
Finland .	1946	106,075	6,341	59
France .	1932	722,246	56,327	77
Germany .	1936	1,312,053	102,031	77
Holland .	1946	284,019	6,958	24
Italy .	1942	928,063	34,674	37
New Zealand .	1946	41,871	1,825	43
N. Ireland .	1938	25,742	1,150	44
Norway .	1944	62,241	4,546	73
Scotland .	1947	113,117	6,311	55
Sweden .	1946	131,782	11,853	89
Switzerland .	1946	90,537	3,008	33

children. The loss of social caste does not seem to have attached to the degradation of status incident to it until somewhat later. Some medieval heroes of aristocratic if spurious birth appear to have prided themselves on their title of 'bastard.' The Conqueror was known as *Wm. the Bastard*, without any connotation of shame, but rather as a distinctive appellation. But apart from exceptional instances, social inferiority gradually followed as a necessary corollary to deprivation of proprietary rights.

From an examination of the ann. reports of the Registrar of births and deaths, it will be found that in England the percentage of illegitimate births is comparatively high in the E. cos. of Suffolk, Norfolk, and Lincolnshire. It may be taken generally that the percentage is higher in agric. areas than in industrial cos.

The table above gives the illegitimate births per 1000 births for various countries for the year shown against each.

See also LEGITIMATION. See *Annual Reports of Registrar of Births and Deaths*; *International Health Book of League of Nations*.

came into conflict with the Iroquois (1678). They now number under 200, and are situated on a reservation at the Quapaw Agency, Indian Ter. See J. B. La Salle's account of his explorations (1670-82); G. Catlin, *North American Indians* 1842.

Illinois, riv. of U.S.A., formed by the union of the Kankakee and Des Plaines Rrs. in Grundy co., about 10 m. from Morris, Illinois. Rising near Lake Michigan, it flows S. and S.W. through La Salle co., entering the Mississippi about 20 m. above Alton and the Missouri's mouth. Length about 500 m., navigable for steamers 250 m. to La Salle, whence a ship canal connects it with the Chicago R. and the Chicago Drainage Canal, and hence with the Great Lakes. Ottawa and Peoria are the chief cities on its banks.

Illinois, one of the N. central states of the U.S.A. known as 'the Prairie State,' situated in the valley of the Mississippi and the basin of the Great Lakes. It is bounded N. by Wisconsin, E. by Lake Michigan and Indiana, S.E. by Kentucky, S.W. by Missouri, W. by Missouri and Iowa. The Mississippi R. is on the W. the Ohio on the S., and the Wabash on the E. frontier. The surface is a vast plain,

with an average elevation of 500 ft., sloping slightly towards the S. and S.W. Cairo is the lowest point (267 ft. above the gulf of Mexico), Silver Creek one of the highest (1145 ft.). There is a low, fertile plateau in the S. known as Egypt. The Great Prairie (200 m. long) is in the centre. The Illinois is the chief riv., and there are saline, sulphur, and chalybeate springs in the S. The Illinois and Michigan Canal, connecting Lake Michigan and the Great Lakes with the Mississippi was constructed between 1830 and 1850. There is a difference of about 11° F. in the temps. of N. and S. The soil is very fertile, but an underlying stratum of clay, which retains the rainfall, necessitates elaborate drainage systems. Trees have been extensively planted, and I. ranks next to Iowa as an agric. state. Wheat, corn, hay, and various other cereals are grown. Fruit, especially apples, pears, and peaches, is much cultivated, particularly in the lilly belt of the S. Here cotton is also grown successfully. There are good vineyards, the centre of the liquor industry being Peoria. Livestock are reared and fine dairy produce is obtained. Slaughtering and meat-packing is the most important industry, centred at Chicago. Fisheries are also carried on largely, pike, bass, salmon-trout, carp, sturgeon, and paddlefish being plentiful in the rivers and lakes. Bituminous coal is the chief mineral, the coal-field covering about 37,500 sq. m. In 1917 the coal output was 73,446,930 tons. Pig-iron, petroleum, natural gas, sandstone, and limestone are also valuable. Building-stone is quarried chiefly in Monroe, Lawrence, and Decatur cos. Zinc, fluor-spar, Portland cement, gypsum, and marble are found. I. ranks third in mineral output in the U.S. The last figures on agriculture show that in 1916 the chief cereal crops were maize 514,268,000 bushels; wheat, 19,533,000 bushels; oats, 168,693,000 bushels; barley, rye, and buck wheat are also grown. The output of soya beans at 75,036,000 bushels (1916) amounted to more than one-third of the country's entire output. Soap, candles, and pottery are among the chief manufs. I. ranks as the third manufacturing state in America, giving precedence only to New York and Pennsylvania. Some of the most important tns. are Chicago 3,396,800; Springfield (State cap.), 75,500; Peoria, 105,000; Rockford, 81,600; E. St. Louis, 75,600; Oak Park Village, 66,000; Evanston, 65,300; Cicero, 61,700; Decatur, 59,300; Berwyn, 48,400; Aurora, 47,100; and Joliet, 42,300; other tns. are Quincy, Galesburg, Jacksonville, Freeport, LaSalle, and Ottawa. There are 100 cos. Communication is excellent both by rail and water. There are well over 12 thousand m. of railroad track in use. The railway transport is the greatest in the U.S. and Chicago is the largest railway centre in the world. The transport by rail is so cheap that it has brought down the freightage cost on the Ohio and the Mississippi. The Sangamon and Morgan Railway was the first opened (1839). The N.W. Univ. at Evanston was

founded about 1851. The State Univ., founded in 1867, is situated at Urbana and Champaign; Chicago Univ. (q.v.) was founded in 1892. There are many other fine educational and charitable institutions in I., including the Armour Institute of Technology and the Rush Medical College of Chicago, the Knox College at Galesburg, and Illinois Wesleyan Univ. at Bloomington. The area is 56,400 sq. m. (including 453 sq. m. water). Pop. 7,897,290.

*History and constitution.*—In 1673 Joliet explored I., and in 1675 Father Marquette founded a Jesuit mission among the Kaskaski Indians. La Salle (q.v.) gave the state its present name (1679), from the Indian tribes settled there, and built Fort Crèvecoeur. Tonty continued his explorations. Fr. traders settled in I. between 1683-90. In 1763 I. passed to England on the cession of Canada. It became part of the N.-W. Amer. Ter. in 1787, and of Indiana Ter. in 1800. In 1818 it was admitted to the Union. The Mormon troubles culminated here (1840-44). The present constitution was adopted in 1870. There is a Senate of 51 members, and a House of Representatives of 133 members, elected for four and two years respectively. Twenty-six representatives are sent to the Lower House of the Federal Congress. See I. F. Mather, *The Making of Illinois*, 1900, 1912; C. W. Alvord, *Centennial History of Illinois*, 1920; W. F. and S. H. Dodd, *Government in Illinois*, 1925; E. F. Dunne, *Illinois: the Heart of the Nation*, 1933; D. C. Peattie, *A Prairie Grove*, 1938; Federal Writers Project, *Illinois: a Descriptive and Historical Guide*, 1947.

*Illinois, University of*, was started by the state of Illinois. Under the Federal Gov.'s Land Grant Act, the state secured big tracts in 1862 and in 1867 gave the univ. 2293 acs., of which two-thirds are devoted to agriculture. The univ. has a teaching staff of over 1000 and about 14,000 students.

*Illiterates, Illiteracy.* It is not easy to obtain reliable returns either in England or elsewhere of the average number of persons who are unable to read or write. Although the census returns suggest themselves as the natural mode of getting the information, there can be, even through this channel, no means of compelling persons to disclose their I., nor, unless they ought to sign the returns themselves and only do so by a mark, any direct evidence of such I. In countries where universal conscription is in vogue it is easy to get at the percentage of I. from the registration of recruits. In Germany, Sweden, and Switzerland over 99 per cent. are able to read and write; in Holland somewhat over 1 per cent are I., and in France and Belgium the percentages of I. are about 5 per cent. and 10 per cent. respectively. Nearly one-third of the Gk. and It. conscripts are I. The marriage registers, where they exist, betray the proportion of I. spouses, and in Italy the proportion of I. husbands corresponds to that of the conscripts,

while of the number of women married annually nearly one-half are I. From these registers it appears that the lowest percentage of I. is to be met with in England and Wales, Scotland, Germany, and Australia, and the highest, excluding Italy, in Ireland and S. Africa. With the general spread of education throughout the masses which took place in advanced countries during last century, there was naturally a very marked drop in the percentage of I. in these countries. Russian statistics show a creditable decline in I. in the last forty odd years from 75 per cent in 1895 to only 10 per cent in 1942. A still more striking improvement is found in Turkey, under the impulse of Kemal Atatürk's educational reforms, the drop being from over 90 per cent in 1927 to 35 per cent in 1931. Spain and Portugal are more backward than the

during the seventeenth, and lasted in isolated bodies till the end of the eighteenth. The Rosicrucian Illuminati are quite distinct; their tenets are mixed with alchemy and occultism (see ROSICRUCIANS). Finally, in 1776 a secret masonic society with republican and free-thinking views was formed by Adam Weishaupt, prof. of Canon Law at Ingolstadt, Bavaria, who had been educated by the Jesuits, but became a freethinker. It was anti-Jesuit, and was suppressed in 1785.

Illumination (or Illuminism) term used in connection with the 'Enlightenment' period of philosophy. Scientific reason, or the appeal to reason as opposed to the reliance on external authority, marked the metaphysical systems from Descartes to Leibnitz. The evolution of existing beliefs and institutions was completely

Country	No. of Illiterates	Percentage of population
Egypt (1927)	8,817,000	83.7
India (1931)	268,000,000	84.0
(1941)	284,700,000	73.0
Brazil (1920)	23,127,000	67.0
Mexico (1930)	9,000,000	59.5
Turkey (1934)	7,500,000	55.1
Greece (1935)	1,500,000	32.0
Portugal (1940)	5,881,000	49.0
Spain (1940)	6,514,000	27.0
Poland (1939)	3,875,000	21.0
Italy (1935)	6,112,000	19.0
U.S.S.R. (1942)	17,000,000	10.0
Canada (1931)	309,300	3.79

Illiteracy is practically unknown in the U.S.A. The rate for the whole pop., white and coloured (1917) was only 2.7 per cent of those over fourteen years of age.

rest of Europe, a fact which has its influence on I. in the S. Amer. states. Newfoundland, owing to its scattered pop., has a high degree of I. The above table gives the most recent percentages.

**Illkirch-Grafenstaden**, vil. of the Fr. dept. of Bas Rhin (Alsace), 5 m. S. of Strasbourg. Pop. 6400.

**Ilorin**, walled native tn. of Nigeria, cap. of an administrative prov., and former cap. of an association of states of the Yoruba country, W. Equatorial Africa, about 170 m. N.N.E. of Lagos. It has on the Asa, a trib. of the Niger. Pop. about 90,000.

**Illuminants (engineering)** See LIGHTS, ARTIFICIAL. **LIGHTHOUSE**—*Illuminating Agents*, S. SEARCHLIGHT, L. L. A. VIOLET LIGHT, N. LAYS, etc.

**Illuminati**, enlightened ones, the name assumed at various times by religious sects and secret societies. The sp. 'Illuminati' (*iluminados*) seem to have been in origin akin to the various mystic Gnostic heresies which flourished in the early Middle Ages, though their appearance in Spain is later. They were suppressed by the Inquisition during the sixteenth century; they also estab. themselves in Piedmont and elsewhere in France

Ignored and their value denied, save in so far as they were consistent with abstract principles set up by the rationalists as the ultimate criterion of truth. With the rationalists the pure reason became opposed to all emotions and enthusiasms which failed to satisfy its dogmatic tests, and the net result of rationalist inquiry was the truly barren substitution of a natural deism for revealed religion of all kinds. This sterile and unimaginative philosophy was paradoxically, as it must seem to us, known as the Enlightenment, but the success that the scepticism of Pascal and others might well have had in confounding the principle of pure *a priori* reason was checked for a time by the remarkable progress of science. It was the shifting of metaphysical inquiry from the exclusive ground of deism to the analysis of knowledge that eventually sounded the death knell of rationalism. Locke taught that knowledge was wholly empirical, and denied the existence of those innate ideas of reason upon which the rationalists had consciously or unconsciously rested their theories; and later Rousseau's emotional polemics swung back the pendulum in favour of the feelings as against the intellect in the

realms of speculative inquiry. Before the period of the Enlightenment had closed and long before Rousseau, Spinoza had checked the tendency of rationalism to remove God to the position of a mere far-off observer and cut him off unrelated to the mundane, by his insistence on a religious and ethical requirement on the essential unity of things. Voltaire introduced the results of the first Enlightenment into France, and the first Enlightenment took the form of a thoroughgoing materialism in which truth and religion were diametrically opposed. Within this circle shined the light of Rousseau who beginning as an Encyclopédiste of the first Enlightenment ended by being bitterly hostile to the whole principle of the rationalists which in its grotesqueness of the logical reason and condemnation of mysticism affirmed the conception of man as a self-centred unit entirely independent of the arbitrary environment in which he found himself.

The cardinal fact in the Enlightenment is individualism and its corollary the assumption that institutions could be cast off at will and a fresh start made. It ignored the fact that all institutions have their roots in the depths of time and though this error was immensely favourable to the aims of the leaders of the first Revolution Rousseau's doctrine however unambiguously they may be susceptible of pure expression in terms of rationalism deputed from rationalism in that they denied the value to human welfare of all the sciences. Later it was the German empiricism begun by Lessing and Herder continued in the idealism of Hegel, Kant and others that swept the so-called Enlightenment from the field of philosophy. Rousseau's demand for a return to nature ignored the social life in a way inconsistent with practical experience, and even with his own mature views. The German philosophy also claimed the realisation of the abstract freedom of man, but in the end is our to find again the value of the inner life of the individual insisted on shaping that freedom in forms of real worth and beauty. In some ways commensurate with the obvious potentialities of life and feeling. With the earlier German empiricists God ceases to be a cold intellectual abstraction and is regarded as immanent in nature, human affairs and all spiritual experience. The smallness of the ambit of reason and expression in Kant's transcendentalism which looks upon it as an instrument utterly useless to fathom the realities of God and the soul. Perhaps Kant's critical philosophy is the last word on the subject when it denies the claims of rationalism to comprehend reality on the ground that thought and the material of sense are indissolubly connected and that so sense experience can possibly be an ultimate reality. See L. Brunschwig, *Spinoza and his Contemporaries*, 1921; L. Roth, *Spinoza, Descartes, and Maimonides*, 1921; G. D. Hicks, *Critical Realism*, 1938.

**Illumination of Manuscripts.** The art of embellishing MSS. either by pictorial ornamentation or with decorated letters and designs in gold and colours was much

practised in the Middle Ages, and especially applied to devotional works. The art appears to have been evolved from the classical methods of decorating or illustrating the books of the second and third centuries with pictures either in outline or with gilt shading to enhance the light effects, and intended to represent scenes spoken of in the text, through the solid Byzantine art of adorning MSS. of the Gospels with brilliantly painted ornamental designs, gilt or silver lettering, and finely executed miniatures enhanced by highly gilt backgrounds, to the ornamentation of the Franco-Lombards of the so-called Carolingian school the characteristics of which were a liberal use of gold and large and profusely embellished initials. It is on most of the pages. A fragmentary copy of the *Book of Hours*, now



A REPRODUCTION OF A PAGE FROM AN ILLUMINATED MANUSCRIPT

in the Ambrosian Library at Milan, is said to be the earliest extant example of an illuminated MS. Its brevity of decoration is in striking contrast with the brilliant miniatures (a technical term from Latin *minio*, to colour with red lead, meaning a picture in an illuminated MS. and not a small portrait) of such MSS. as the homilies of Chrysostom and various fragments of the Visitation canons to be seen in the Brit Museum. The faults in the Byzantine art appear to be that, while the inherited Oriental splendour of colouring in gold and vermillion gave character to the general scheme of decoration the drawings themselves, or miniatures, though classical in style, are not only dull and flat in colouring but the whole form of the figures of the saints or other personages represented is constrained and

unprepossessing. The reaction set in with the development of the art in Italy in the ninth and tenth centuries, and later in the Frankish empire. The Carolingian or Frankish art owed its attractiveness largely to the independent 'Celtic' element originating in Ireland. The Irish art dispensed almost entirely with the use of gold, and relied for its effect on its designs and borders of intertwined ribbons, tangled knots, and intricate patterns and spirals, and legendary animals, the whole being executed with marvellous precision and minuteness. The celebrated Lindisfarne Gospels in the Cotton Collection in the Brit. Museum form one of the finest examples of the Celtic style, though these were really productions of Scottish monastic settlements. The colouring of the Celtic style is less bizarre than the Byzantine, but the drawing of figures and objects is crude probably because, being native-born, it proceeded independently of all classical models. The Franco-Lombard art combined the best elements of the Celtic and Byzantine; a return was here made to the abundant use of gold. The pure ornament outweighs the illustrations or miniatures, which latter, as before, generally relate to scenes or characters from the Gospels, and are executed in free-hand in the later Roman, or so-called 'debased classical' style. Examples of Carolingian art are Lothair's Gospels, Charles the Bald's bible, and an evangelarium among the Brit. Museum Harleyan MSS. A radical change came over the art of illumination at the end of the twelfth century, and the conventional style then elaborated subsisted for something like 300 years. Almost the chief feature of bibles of this period is the border, which generally takes the form of a frame of fanciful foliage or other device. Greater prominence is given to the characters or MS. itself during this period, and in consequence the double-column pages are occupied mainly with the closely written characters, the 'miniatures' having become nothing more than large initials containing in actual miniature a pictorial representation of some act or scene relating to the corresponding text. Numerous examples may be found in the small bibles of the period. By the fourteenth century greater skill had been attained, not only in the more agreeable delineation of the human form, but in the representation of ornamental foliage. Scenery begins to appear, and the stiff and even grotesque contortions of the Byzantine figures yield to a free and dramatic arrangement or grouping, while the tawdry gold background disappears altogether. Skill in realistic drawing, however, tended to the destruction of illumination as an art in itself, and from the perfection attained in the Middle Ages the decorative execution declined to a style characterised by miniatures treated with admirable skill, bordered with gold, and interspersed with cleverly painted flowers and insects, while the text assumes a place of merely secondary importance. One of the best examples of fifteenth century illumination is the *Bedford Book of Hours*, now in the

Brit. Museum. With the Renaissance and the return to classic models the art of illumination attained its zenith in minute delicacy of colouring and perfection of drawing, and, furthermore, an official recognition by both the republican princes and the various popes and doges. Ultimately, however, it was the invention of printing that destroyed the art and reduced it to the mere pastime of painting miniatures in spaces left for the purpose, rather by way of subsequent adornment than as an art in itself.

The Brit. Museum has no true classical illumination, the few surviving specimens of which must, according to Dr. Arundell Eddalle, be sought in Italy; while the remains of the Cotton Genesis, fifth or sixth century, belong to the Byzantine School. But 'in work of all the later schools, down to the decay of the art upon the rise of printing, the museum is abundantly rich, not only by grace of the foundation collections, but by gifts, bequests etc.' Fine examples of the Eng. school of I. M. recently acquired include: *The Apocalypse of the Abbey of Abdington* (thirteenth century), acquired in 1931; *The Psalter of the Abbey of Evesham* (thirteenth century) purchased and presented in 1936 by the National Art Collections Fund; *The M. R. James Psalter* (fourteenth century) written for use in Durham diocese, and presented in 1937; *The Luttrell Psalter* (q.r.) acquired in 1929; *The Bedford Hours and Psalter*, a book by an Eng. artist and not to be confounded with the more famous Hours (Add. MS. 18450) also executed for John, Duke of Bedford, and of Fr. workmanship. It is, says Dr. Eddalle, one of the finest examples of the school which arose and flourished for a time after the Black Death and was the end of Eng. illumination; and it is unique in containing over 300 exquisite miniature heads, which may be portraits. The Museum secured it, when auctioned, for £33,000 (see A. Eddalle, *The British Museum Library*, 1946).

Consult: F. Delamotte, *Primer of the Art of Illumination*, 1860; W. Tymms and M. Wyatt, *Art of Illuminating*, 1860; H. Shaw, *Handbook of the Art of Illumination as practised in the Middle Ages*, 1886; J. Bradley, *Manual of Illumination*, 1887; J. A. Hebert, *Illuminated Manuscripts*, 1911; J. L. Choullant, *History and Bibliography of Anatomic Illustrations*, 1920; S. Farnworth, *Illumination and its development in the Present Day*, 1922; F. Jacobi, *Deutsche Buchmalerei in ihrem Stilistischen Entwicklungsphasen*, 1923; E. Millar, *English Illuminated Manuscripts*, 1928; A. Molther, *Catalogue of Illuminated Manuscripts*, 1937.

Illuminations, see PYROTECHNICS.

Illuminism, see ILLUMINATION.

Illusion, term loosely applied both to delusions and hallucinations, or, in other words, to perversions of the senses and perverted ideas. Psychologists differ as to the more appropriate application of the term. Esquirol, the celebrated Fr. alienist (1772-1842), in classifying mental diseases, distinguished the two states by referring hallucinations to an excited state

of the brain affecting the remembrance of the sensations of sight and causing the subject to see what are commonly termed visions or apparitions, and defining I as the false interpretation of a sensation actually perceived. Dr. Ferrier, while including both under the generic name of Is., differentiates between an I. of the senses and a delusion of the mind. He defines Is. generally as sensations without a corresponding external object, giving the names *spectral illusion*, phantom, or phantasm where the eye is or seems to be the seat of sensation, and the term *irrid idea* or *conception* when the I. is due to an act of ideation. The whole distinction is sharply drawn by regarding an I. as a mockery, false show, or deceptive appearance, and an hallucination, delusion, or 'illusivo transformation' (Ferrier) as a chimerical thought. Popularly, any transformed appearance of a real object, any appearance without a corresponding physical or external object, and any distorted, exaggerated, or misconceived notion or idea constitute Is. The distinction is important according to Dr. Tuke in regard to insanity, because, while the same may easily transform a real object into something else, and it is the perception of an object externally projected without the slightest corresponding reality indicates some serious disturbance of the nervous system. Both Is. and delusions, however, are consistent with sanity. A scientist closely concentrating his mind and senses on some experimental work may well have visual and auditory Is. conjured up by a subtle interaction of some external object upon strained or expectant senses, without thereby being mentally diseased. Is. may occur quite early in life, and are more common in males than females. According to Dr. Ferrier, some who have experienced Is. have been remarkable for active memories, great ability, and extreme sensitiveness, while others were by no means so endowed, and, again, some are in perfect health, while others are suffering at the time from either trifling indispositions curable by dieting or from serious inflammatory and febrile diseases. In the criminal law (q.r.), the term delusional insanity appears to embrace Is. and hallucinations indifferently, provided the reason is involved. See D. Tuke, *Dictionary of Psychological Medicine*, 1832; T. and J. Beck, *Medical Jurisprudence*, 1838; W. Guy and D. Ferrier, *Principles of Forensic Medicine*, 1881.

'Illustrated London News,' founded by a small printer and newsgiver of Nottingham named Herbert Ingram, and generally said to be the first illustrated newspaper ever pub. The first number was brought out in May 1842, and among the earlier of its artists were John Gilbert, John Leech, and Birket Foster. Its first notable editor was Charles Mackay and among its most distinguished contributors have been Mark Lomon, George Augustus Sala, Clement Scott, and Andrew Lang.

Illustration is as old as art itself. Two or three thousand years before Christ, and earlier still, the Egyptians adorned the

walls of sepulchral chambers and the pillars of temples with the exploits of their kings, and the Assyrians told the story of their great wars and sieges on the friezes of their monuments; but in the modern sense I. may be defined as the pictorial presentation of an idea expounded in an accompanying text. It is thus an accessory to the printed word, although in the hands of a skillful artist the two may often be aesthetically indivisible. This article attempts to deal only with book I. (For the medieval illuminated MSS. see ILLUMINATION OF MSS.).

The earliest I.'s were block prints, such as the *St. Christopher* (1423), which were usually of religious subjects, and which made their first appearance in Europe at about the same time as the invention of printing, although probably independently of it. These blocks were woodcuts, having the design cut with a knife in relief on the plank surface of a soft wood. Any accompanying text was also cut in the same block. At a later date the prints were pasted together to form books, a few of which are still extant, notably the *Biblia Pauperum* (c. 1465). One of the earliest books printed from movable type to contain woodcut I.'s was Aldus's *Hymnolomachia Polifili* (1499) (q.r.), and not long afterwards Botticelli executed his admirable designs for Dante's *Divina*

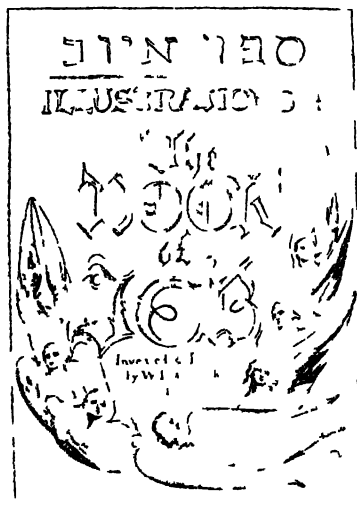


HANS HOLBEIN THE YOUNGER  
'Death of the Duchess' from *The Dance of Death*, 1538.

*Commedia*. Broadly speaking, I. experienced the same ups and downs as painting, and whenever an important school of the greater art arose then, too, the lesser art flourished. Thus the It. Pollaiuolo and Mantegna not only painted but executed a number of excellent line engravings. In Germany, Dürer and the younger Holbein exploited the method, and the latter's book *Dance of Death* is his most notable

work in this field. In France, fine woodcuts were made for Books of Hours at the end of the fifteenth century.

Copper was first used for engraving about 1477 but the method was not introduced into England until about 1540 when it gradually superseded woodcuts. Unlike the latter it is an intaglio process. The design is cut with a burin, or graver, on to a polished copper plate which is then inked over and the surface wiped clean, leaving the ink in the recessed portions. Under pressure the ink is transferred from the plate to paper. Fine detail may be reproduced by this method and it was widely practised by famous artists for book I up to the nineteenth century, notably by the school of Rembrandt in Holland, and of Watteau and Fragonard in France, and later by Hogarth and Reynolds. The aquatint, also an intaglio process but capable of suggesting tonal variation, was used by Rowlandson to great effect in his *English Dance of Death* (1816) and *Tours of Doctor Syntax* (1812). The drawing was done by the artist himself and the prints from it were then hand-coloured by professional colourists.



WILLIAM BLAKE  
Title page Illustrations of the Book of Job

Etching, another important intaglio process, allows greater freedom than engraving. The surface of a metal plate is made acid resistant by covering with wax which is then worked over with a needle to open up the surface of the copper. It is next etched in acid and may be controlled to produce varying depths of line which will hold more or less ink. William Blake adapted the process to his own ends for his *Illustrations to the Book of Job* (1825)

by etching in reverse so that the design was printed in relief, as in a woodcut. Crankshaw used it as the medium for a large part of his enormous output, and in his time it was the medium for the relationship of author and artist truly welded. For the reproduction of all paintings mezzotint and aquatint were widely used in the hands of professional engravers, both processes being capable, unlike copper engravings and etchings, of rendering subtle gradations of tone.

Thomas Bewick first evolved the technique of wood engraving, as opposed to wood cutting, by working on the end grain of hard woods such as box, and achieved an astonishing range of tone and sense of depth. His love of country life and his genius for depicting character exemplify themselves in his smaller vignettes, though his two works generally acknowledged to be his greatest are the *General History of Quadrupeds* (1790) and the *History of British Birds* (1797). He founded the school of fine wood engraving which has continued with few interruptions down to the present day. Blake's one venture in the field of wood engraving was a number of vignettes for an edition of Virgil's *Pastorals* (1821).

Senefelder's invention of lithography made its first appearance in England at the beginning of the nineteenth century, and gradually became established as a method of book illustration. Its virtues at that time lay in its capacity to interpret faithfully the varying characteristics of pen, pencil or brush, and in the fact that the artist's original work was reproduced without the intervention of the engraver. It was used widely for illustrated works of topography, and to good effect in the original edition of *Johns Look of Vandyke* (1816), but it was in France that it was unsurpassed, notably in the work of Daubigny and Gavarni.

The art of engraving declined in the middle of the nineteenth century, to be revived by the Pre-Raphaelites who were the leading spirits of a new school of fine book engraving. They drew on the wood itself, sometimes setting the engraver an almost impossible task, as is evidenced by the complaints of the Dalziel brothers that Rossetti was quite unable to master the limitations of the medium. Yet they were responsible for that close and ideal union between artist and engraver which in this respect had so largely accounted for the excellence of the work done. Their influence in such contemporary magazines as *Good Words*, *Cornhill*, and the *Lancet* has found a study of these will at once reveal their reverence for bygone eras, their emulation of old masters, their loving attention to detail, their naturalism, and their passion for symbolic interpretation. The material conviction of Millais's designs for Trollope's *Framley Parsonage* links the Pre-Raphaelite brotherhood with Houghton, Pinwell, Frederick Walker, and even Whistler, who represent the 'sixties' period. The most satisfying books were those illustrated by a single artist, such as Millais's *The Parables of Our Lord* (1864), Hughes's



illustrations for Christina Rossetti's *Sing-song* (1872) and of course Tenniel's *Alice* (1869). The broad characteristics of this period were idyllic delineation of the charms of country and home life and delight in open air effects, freedom and movement—a delight expressed partly by large clear spaces, and partly by loose but nervously sensitive outlines.

One of the later schools of illustrators was a group who sketched for the *Dial* (1889-1897). Their magazine was an artistic protest against the indiscriminate issue of books whose cheapness was the single apology for their careless binding, common paper, and inferior art, by means of photographic processes which were then beginning to establish themselves. A much more effectual protest was made by Wm. Morris, when, in 1891, he set up his Kelmscott Press. Print was a secondary consideration, and he printed a series of book covers which are an ornament to the shelves of the most fastidious of book collectors. Like his paintings and his tapestries, his illustrated volumes are one and all imbued with a true decorative sense and the sturdy spirit of romance and medievalism. His influence gave rise to the 'Birmingham school'—a without exaggeration may be said even to-day, to inspire all workers in applied arts. And with Morris must be associated Rackin, who gave such substantial and truly encouraging aid to the struggling artists of the day. His *Mother's Painters and Stories of France* for which the services of the best characterists were engaged still remain models for all who aspire to making beautiful books. In the last decades of the nineteenth century there were many fine illustrations but in their conception of art, in their choice of subject they were too idealistic to make any effort at grouping or composition expedient or even possible. The conventional grace of du Maurier, the clever 'suppliants' of Phil May, sent us to *Punch*, the pen and ink drawings of the Abbey and Harry Furness were all popular and to their imitation. In colour Walter Crane expressed delightful fancy in the decorative designs. Kate Greenaway's studies of charming children in high-collared and long-skirted and Randolph Caldecott's gay hunting scenes were, and are still familiar.

The advent of photography in the last decades of the nineteenth century was a medium for reproducing drawings was to revolutionise the whole field of illustration, planographic and relief. Among the first to exploit its possibilities was Aubrey Beardsley whose brilliant black and white drawings were reproduced by means of fine blocks. The line block is made by printing a photographic negative of the artist's drawing on to a sensitized metal plate which is then etched leaving the lines of the drawing which are acid-resistant in relief. The plate is then mounted and printed in the same way as a wood engraving. In an age of increasing commercialisation this process had the advantage of speed, and from the artist's point of view it had the merit of faithfully

reproducing his original drawing in any desired size, and the original itself was not destroyed in the process. This was soon followed by the arrival of the half-tone process which was a method of reproducing continuous tone subjects such as photographs. In principle it is the same as the line block except that the negative which is to be printed on the metal plate is first broken up, by exposure through a cross-hatched screen into a series of dots of varying sizes creating an illusion of tone. Coloured originals are readily reproduced by the half-tone process by means of colour filters which break down the tones of the original into their three primary elements. Separate half-tone plates are made of each and superimposed in print in to recreate the colours of the original in their true values. The process is capable of reproducing a wide range of subject both in monochrome and colour and is used for newspaper and very widely in books. It can give very fair representations of pencil and crayon drawings by the use of pencil etching techniques. It gives the artist great scope in that the reproduction of his original is mechanical, leaving him with no medium to be considered. Against this must be set the fact that the half-tone screen ultimately gives a flattened and illusory rendering of his original tones, and the mechanism of the process allows the poorest standards of draughtsmanship which may be seen in the popular magazines. In the field of colour the later development has been its use in producing colour-transparent photographs.

The present century has seen rapid development in the old realms of relief and planographic processes. Photogravure (1911) has replaced in book illustration the process of photographing where a softness of tone is desired and to reproducing designs such as themselves. Its chief advantage is to do, however, is in the reproduction of a wide range of illustrated subjects, where by means of rotary printing on paper fed from rolls, high speed and almost colourless results with very little deterioration of the printed image.

Photography, a planographic process, is used to-day in the field of the camera, in the cinema, in the photographic process. While it can interpret a wide range of artistic technique it cannot attain the crispness and clarity of autolithography where the artist is working direct on to the stone. The main reasons for this inferiority are the necessity of intervention of professional copyists and retouchers, and the necessity of the screen to produce variations of line strength. It is rarely used for fine work and in this field has the advantage over process halftone that it can achieve much more delicate effects on a wider variety of print surfaces. Art paper, commonly considered the artistic bughbear of half-tone, need never make its appearance in lithographic work.

One other photographic process which has perhaps more than any other overcome the limitations of the camera must

be mentioned briefly at this stage. Collo-type, like lithography, is a planographic method of printing (i.e. from a flat surface), but unlike any other method it dispenses with a screen for reproducing tones. It can reproduce fine l's with great fidelity both in black-and-white and in colour, but owing to the instability of the printing surface it deteriorates rapidly and is therefore confined to printing small eds. The process excels in the reproduction of works of art, where, with as many as seven or eight printings, a result is obtained which can be achieved by no other process.

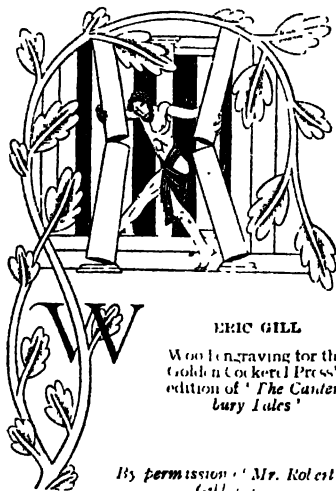
In view of the acknowledged limitations of photographic methods it is not surprising to find an antithetic tendency at work among present day artists over the whole field of book I. This manifests itself in a return to earlier craftsmen's methods, notably in the flourishing schools of wood engraving; and much fine work is also being done by autolithography. Earlier in the century the work of various private presses did much to revive and encourage good craftsmanship, and in this connection should be mentioned the work

appeared in Great Britain is E. McKnight Kauffer who has done much imaginative work in the field of advertising as well as in book I. Of the latter his l's for the Nonesuch Press *Don Quixote* should be mentioned. This press has contrived to produce books matching in quality those from the private presses, but, by making the best use of modern mechanical methods, to publish them at comparatively cheaper prices. Other artists who have done fine work in wood engraving are Paul Nash, Douglas Bliss, Clare Leighton, John Farleigh, and many more. Linoleum, too, has proved an excellent medium for either black-and-white or colour I. and two artists who have worked successfully in this medium are Claude Flight and Wm. Kermode. Autolithography has seen a welcome revival, and in this connection should be mentioned the work of Barnett Freedman (especially a series of his coloured l's for Tolstoy's *War and Peace*), John Nash, and John Piper.

The constant development of new processes of book I. (as for example the recent application of plastics to lithography) tends towards a new synthesis of the craftsman and the machine, with the aim of achieving the maximum fidelity of reproduction while allowing the greatest scope to artistic technique. See G. Cruikshank, *Water colours*, 1903; H. E. Furst, *Modern Woodcut*, 1921; E. J. Darton, *Modern Book Illustration*, 1931; The Studio, *Children's Books of Yesterday*, 1933; J. Thorpe, *English Illustration: the nineties*, 1935.

See also BLOCK-BOOKS; CARICATURE; ENGRAVING; ILLUMINATION OF MANUSCRIPTS.

Illyria, name of a vaguely defined mountainous dist. on the E. coast of the Adriatic, running from Durazzo in Albania up to Fiume in Istria. Inland the bog was still more indefinite, but it may be regarded as including the N. parts of Albania, Montenegro, part of Serbia W. of the Morava, Dalmatia, Bosnia-Herzegovina, and part of Croatia-Slavonia. The Rom. prov. of Illyricum varied in area from time to time, and no strict geographical limits can be assigned to it. In early Gk. hist. we only know of the barbarian 'Illyrians', whose legendary ancestor was descended from Cadmus and Harmonia; archaeological research shows that the primitive peoples spoke a Venetic dialect, also Meroanian, akin to modern Albanian. Gk. colonies were settled all along the coast during the whole of the sixth century B.C., and coins and inscriptions have been found at Durazzo (Epidaurum), Split (Salona), Dubrovnik (Epidaurum), etc. The inter-tribal warfare seems to have been checked by Celtic pressure in the fourth century, and a confederation was formed which pressed on Macedonia. Under a chief Bardylis, and his son, Ciltas, Amyntas was defeated, and later Perdiccas, Philip of Macedon finally crushed them. The tribes turned to piracy and harried both Gk. and Rom. trade. Their queen Teuta insolently refused terms, and murdered the Rom. ambas. In 180 B.C. an independent ro-



of Eric Gill and Robert Gibbins at the Golden Cockerel Press. The ed. of *The Canterbury Tales* from this press is a fine example of the work of Gill whose classical spirit combined with great skill as a designer of lettering and typefaces in many instances resulted in a harmonious blending of I. with the printed text. Chaucer, the inspiration of sev. modern illustrators, has also been pub. in a fine ed. with colour plates by Russel Flint, and in America with wood engravings by Rockwell Kent. Another Amer. much of whose output has

puble of Dalmatia was estab., and the kingdom of the Illyrian Genthus was annexed to Rome, 168; Dalmatia continuing aggressive and powerful till A.D. 9, when the whole country became a Rom. prov. It furnished some of the best soldiers for the Rom. armies, and many of the emperors were Illyrian by birth. In A.D. 379 E. Illyricum went to the Byzantine empire. The ethnological character of the dist. was modified by the Hunnish invasion in the fifth century, and in the seventh century by the Slavonic immigration of Croats and Serbs, though the coastns. still remained It. in civilisation. The primitive races remain in Albania alone. In 1809 the Illyrian provs. were formed and ceded to Italy: they were conquered by Napoleon and ceded to Austria in 1813, and till 1849 formed a kingdom of the Austro-Hungarian empire. See also YUGOSLAVIA.

**Illyricus**, see FLACIUS, MATTHIAS.

**Ilmen**, lake of Russia in the region of Novgorod, R.S.P.S.R., 30 m. in length from E. to W. by 24 m. in greatest breadth. Its chief trib. is the Lovat. It discharges its surplus waters by the Volkhov northward into Lake Ladoga.

**Ilmenau**, tn. of Thuringia, Germany. It is situated at the N. foot of the Thuringian Forest on the R. Ilm, 30 m. by rail S. of Erfurt. The tn. is a favourite watering place, and was visited by Goethe, who wrote his *Iphigenia* here. Pop. 16,100.

**Ilmenite**, titaniferous iron ore found in many localities, more particularly at Kragerø in Norway, where good crystals occur, in the U.S.A., and in Canada. It has been found as sand on the banks of the Mersey, and at Helston in Cornwall. The name is derived from the Ilmen Mts. (Ural), where it is found in magnificent crystals. Its formula is generally given as  $\text{FeTiO}_3$ , but in many cases the mineral contains magnesium, so that it may be written  $(\text{Fe}, \text{Mg})\text{TiO}_3$ . It is not isomorphous with hematite, but belongs to the parallel-faced hemihedral class of the rhombohedral system.

**Ilminster**, mkt. tn. of Somerset, Eng., 104 m. from Taunton. Alt. 140 ft. Pop. 2,300.

**Il Obeld**, see EL OBELD.

**Ilobu**, native tn. of Nigeria, in the Yoruba country. Pop. 60,000.

**Ilocos Norte**, mountainous coast prov. of N.W. Luzon, Philippine Is. Its peaks are in part volcanic. The valleys are watered by the Pangasinan and other streams. Cap. Laoag. Pop. 180,000.

**Ilocos Sur**, coast prov. of N.W. Luzon, Philippine Is. Area 644 sq. m. It is rather flat and very fertile. Medicinal plants grow in the mts. Pop. 190,000.

**Iloilo**, Sp. settlement, and the chief port after Manila in the Philippine Is. It is the cap. of Iloilo prov., Panay, in Iloilo Strait, opposite Guimaras Is. It is an open port and exports sugar, rice, tobacco, and coffees. Pop. about 70,000.

**Ilorin**, tn. of the Yoruba tribe, S. Nigeria, some 250 m. from Lagos. Conquered by the N. emirs of Nigeria. It is a busy trading centre in palm-oil products, cocoa, hides, etc. Pop. 42,000.

**Ilseburg**, tn. and watering-place of Saxony, Germany, 16 m. W. of Halberstadt. Pop. 5,300.

**Ilus**, son of Tros and Callirhoë, and great-grandson of Dardanus. He was supposed to be the founder of Ilion, which he called Troy after his father. His son was Laomedon, and he was the grandfather of Priam.

**Iiversgehofen**, tn. of Saxony, Germany, situated in the circle of, and 2m. N. from Erfurt. Pop. 12,000.

**Imac**, see under MALACHI, SAINT.

**Image-worship** (Gk. *ειδωλατρεια*), the use for private or public devotions of graven or painted representations of sacred persons or things, to which honour and reverence are given instead of to the invisible Godhead. The term is sometimes taken for the use, as in the Rom. Church, of pictures or images which are only designed to convey to the worshippers an idea of that which they worship, but it is more often limited to the sense of meaning 'the actual worship of the image itself, not of that which it represents.' It was a comparatively late development of primitive religion, and grew out of the earlier 'fetish worship,' in which a stone or a wooden post was worshipped with the idea that the spirit of a god had entered there to receive sacrifice (cf. Asherah, Ex. xxxiv. 13). The making of images in some definite form marks a great advance in religious thought and shows the birth of conceptions of the Divine character and attributes. Varro affirms that for more than 170 years from the foundation of Rome there was in the city no image of a god either in human or animal form, and historians have proved that neither in Greece, Persia, nor Egypt, were there temples or idols in the earliest times. The Decalogue begins with the command to reverence the one true God and to recognise no other deities, but the lamentations and the denunciations of the prophets show how thoroughly the cults of other deities were rooted in the hearts of the Israelites, how hard it was to root out the idol-worship traditions of their Semite ancestors, and how easy it was for them to adopt the gods and the graven images of their Canaanitish neighbours (1 Kings xii. 8; Jer. xii. 18). The Jewish worship of idols was checked but not eradicated during the Exile, and various passages in the Talmud demonstrate the tendency of the Jews to adopt the gods of the Gks. and Romans, and more especially those of their Oriental neighbours. To prevent such relapses all association of Jews and Gentiles was rendered difficult, and by degrees the former were weaned from idolatrous worship. Neither in the N.T. nor in any genuine secular hist. of the first century of Christianity can any trace be found of the use of images in the worship of the Christians, and though images of Christ, His Mother, and the Apostles are to be found in the Rom. catacombs, it was not until after the estab. of Christianity under Constantine that the practice became common. For the use of images in the Rom. Church, see under ROMAN CATHOLIC CHURCH. See also the series of

articles 'Images and Idols' in J. Hastings, *Encyclopaedia of Religion and Ethics*, 1911, vol. vii.

**Imagist** school of poetry had for its philosopher the Englishman, I. F. Hulme, for its prophet the cosmopolitan Amer., Ezra Pound, and for its expounder the Amer. poetess, Amy Lowell (p. 1). Others who belonged to this school in the period 1912-1917, were the Amers. H. D. (Hilda Doolittle), Harriet Monroe, and John G. Fletcher, and the Englishmen Richard Aldington (and later I. S. Flot, formerly a U.S. citizen) and Harker Read. Like all new schools of poetry, it was a revolt. In this case it was a revolt against excessive romanticism, against loose or sentimental verbal painting, and against the sing-song school. It was Hulme who started the discussion of the image in poetry, and his friend, Pound, who first gave it practical application. All these poets pursued the ideal of order, lucidity, conciseness, and strict objectivity, and they found inspiration in the Chinese, and Japanese poetry. Indeed, it was largely due to the influence of the latter that trans from Chinese verse had such a great vogue some years ago. All the Imagists, according to their temperament, sought to act upon Hulme's theory that the chief aim was to attain accurate and definite description, and that it was essential to prove that beauty might be found in small commonplace things. Most of the experimenters used free verse. See Amy Lowell (ed.), *Some Imagist Poets* (1915), G. Hughes, *Imagism and the Imagists* (1931).

**Imam**, title of the officer who reads the devotions in Arab mosques and who, in Turkey, conducts Muslim marriage and funeral services, as well as performs the ceremonies connected with circumcision. The office was assumed and the title borne by Mahomet, whence it sometimes denotes the head of the faith and it was so applied to the Sultan of Turkey and to day is applied to Yahia, king of the Yemen. Some Mohammedans sets expect the future advent of an Imam the hidden Imam who shall be greater than the prophet himself.

**Imam Yehia**, see YAHIA.

**Imandra**, lake in the Altai region of the R.S.F.S.R., 50 m. S. of Kola. Length 50 m., greatest breadth 10 m., Area 350 sq. m. It drains into the White Sea.

**Imatra Falls**, in inland on the Vuoksen a short distance from its exit from Saima Lake 39 m. N. of Vuopuri.

**Imaus** ancient name for the art of the Himalayas Mts.

**Imbabura**, dept. of Ecuador, with Pichincha to the S., Esmeraldas to the W., and Cacha to the N.E. Lying in the Andes mts., it contains the 15,000 ft. volcano, Imbabura. Stock raising is the prin. occupation. Cap. Ibarra. Area, 2414 sq. m. Pop. 146,200.

**Imbecility**, see CRIMINISM IDIOCY; MENIAL DEFICIENCY ATTS.

**Imbros**, or Imros, is in the N.E. of the Aegean Sea, S. of Samothrace. It belongs to Turkey and is joined with Samothrace to form the administrative dist. of the sanjak of Lemnos. It is the seat of a Greek bishopric. It is extremely fertile. During the Dardanellies campaign in the First World War Gen. Sir Ian Hamilton, commander of the Brit. contingent, had his headquarters at Imros. It was here also that the 11th Div. was concentrated before its attack at Gallipoli. When the withdrawal of the Brit. forces to replace them just went to Imros and one of the other is fear of the peninsula. It was held by the Greeks until 1922 when it was returned to Turkey under the treaty of Lausanne. 11,111. Kastrom. Pop. 9000.

**Immaculate Conception** (Lat. *im*, not, *macula* to stain) dogma of the Roman Catholic Church that the Virgin Mary was conceived without original sin. That is, she was entirely exempt from the stain of sin from the first moment of her existence. The doctrine was the subject of bitter and strenuous controversy in the Church for nearly 600 years. In 1210 St. Bernard protested against the introduction of the new feast into the Calendar of the Church at Lyons without the consent of Rome. In doing so he argues against the doctrine but not conceives the same. In 1478 Domin. Scotus maintained the complete exemption from sin and his school was backed by the Franciscan order. The Thomists or followers of St. Thomas Aquinas and the Dominicans took the opposite view. The Council of Baltimore (1847) without the Pope's sanction declared the doctrine of the Immaculate Conception of the Catholic Church. Pope Sixtus IV in 1483 commended by a constitution that the disputants should observe decency and tolerance towards one another. The way of Imros at the same time closed degrees to those who did not defend the doctrine. The Council of Trent (1546) left the question unsettled and the dispute waxed hotter until the end of the sixteenth century, when the Pope forbade except under certain conditions, all public discussion of the subject and prohibited disputants from attacking each other as heretics. Successive popes were urged to make a decision but beyond administrative matters to the feast of the conception in permitting the word immaculate to be used in connection therewith, the matter was not finally decided until the dogma was proclaimed by solemn decree by Pope Pius IX. on Dec. 8, 1854. The Greek Church celebrates the feast on Dec. 8, under the title of the Conception of St. Anne, the Virgin's mother. J. Hastings, *Encyclopaedia of Religion and Ethics*, 1921, vol. vii., J. Erdmann, *History of Philosophy*, trans. by W. S. Hough, 1890. Elizabeth Saurpe, *The Catholic Doctrine of the Immaculate Conception*, 1931, F. E. Bird, *Explanation of the Immaculate Conception*, 1919.

**Immanence**, or Immanent (Lat. *im*, in, and *manere*, to remain), philosophic term used to denote the conception that the Deity pervades the universe itself, and that His activity and existence are expressed solely by the unrolling of the natural cosmos. It is in opposition to the

doctrine of transcendentalism, which teaches that the Deity has an existence apart from the universe, which is in effect only a subsidiary expression of His activity. Finally *Immanuel* is the term used by Rom. Catholics to denote the modernist theory that religion has its source in man's intimate sense of the divine or need for the infinite (thus N's *Kencyclal Papendi*).

**Immanuel, or Emmanuel**, Heb. proper name meaning 'God (is) with us'. It first occurs in the Bible in the prophecy of Isaiah (vii. 14) to Ahiz, king of Judah, in reference to a child that was to be born as a sign from God that Judah would not be destroyed by Syria and Ephraim. The name occurs again in the Gospel of St. Matthew (i. 23) when it is applied to Jesus the birth of the Messiah being taken as a fulfillment of the prophecy of Isaiah.

**Immermann, Karl Lebrecht** (1776-1810), Ger. poet and dramatist, b. at Magdeburg. Studied law at Halle, fought at Ligny and Waterloo. On his return to Halle his misanthropic friendship with the Countess von Ahlefeldt, first von Lutow, began. He was a judge at Magdeburg (1823) and Düsseldorf (1827). In 1833 he managed the 'Dorf Theatre'. His dramatic success was with the historical tragedy, *Der Kruenispiegel* (1811-12) and *Kaiser Friedrich II.* (1828). In 1831 appeared the mystic poem *Merlin*. Of his novels *Leipziger* (1836) the first imitation of Goethe's romanticism, and his modern realistic satire *Munchhausen* (1838) are the best known. See H. Mayne *Immermann, der Mann und sein Werk* (1921). J. Kayser, *Immermann und die literarische Welt* (1921).

**Immigration**, Act of moving into a country for the purpose of settling there. It is the converse of emigration (*q.v.*) under which he dealing the causes of transference of pop. from one country to another have already been dealt with. In modern times more and more attention has been paid to the subject by govts. Thus the govts. of Brit. colonies, now dominions, have in recent years offered special inducements to attract suitable Brit. subjects to settle in their territories, affording assistance, possessing making grants of land, establishing information bureaus in London, and encouraging their own resources. A great cause of I. in the past as in very recent years has been the flight of certain persecuted classes to an alien land. This extends centuries back beyond the stream of Jews and political refugees from Nazi Germany before the Second World War. The ship *Mayflower* left England carrying to America settlers who fled from religious oppression under James I. in 1620. Another old example of the effect on the dispersion of pop. due to religious severity, was the revocation of the edict of Nantes by Louis XIV. of France, driving thousands of Fr. Protestants from his country. Many of these went to Prussia, and were hospitably received by the Prussian king, and established at Berlin, then new, to the prosperity of which they contributed by their varied skill and industry. Others came to

England, settling at Spitalfields and Bethnal Green, carrying on silk weaving, watch making, etc. There has been a long term general rise of I. in the last century, and indeed (with certain reservations) it is an inevitable sign of social and economic progress throughout the world. Conversely, it is a sign of backward movement and an unwholesome state of the nations when there is too stagnant a watch upon the immigrant.

But there is another side to this matter as long as nations are at so many different stages of development, and the problem of the 'undesirable alien' first faced the United States in the last quarter of last century. From 1880 a great influx of poorer class Jewish immigrants from Eastern Poland and S. Europe came to the United States. They were largely refused from anti-semitic legislation and from competition. Amer. I. Laws in 1882 kept many out on the grounds of poverty or disease and London as a result absorbed some of the poorest and sickest. It was found that these aliens caused the displacement of Brit. workers, lowered the standard of living, and sometimes were housed together in unsanitary conditions. In 1889 a committee of the House of Commons inquired into the question and in 1902 a Royal Commission reported on it. This resulted the Criminal Aliens Bill 1904, and the Aliens Act, 1905. This Aliens Act stated that an immigrant would be held to be undesirable and could be repatriated if he could not show that he was able to support himself and dependent on him if he was an idiot or lunatic or suffering from disabling infirmities.

The country which first coped with the problem on the large scale was the United States. Statistics there had been kept from 1820, and showed an increase from 115,000 in 1821-30 to 216,000 in 1881-90. As stated legislation passed in 1888 and the next decade showed a fall to 184,000 though this was rapidly overtaken for a time. The total for the period 1901-10 was 514,000, or 1911-20 736,000 and for 1921-29, 1,867,500. For 1930-39, the figures are 1,947,481 and 1,703,370. In the earlier years of last century the immigrants to the United States came mainly from Britain and Ireland. Political conditions and the revolution of 1848 caused many Germans to go to America, and the flow continued the development of America's railway system and opening up of farm lands. It was people from all parts of W. Europe towards 1900, income is from S. and E. Europe began to predominate. Austria, Hungary, Italy, and Russia furnished half the total number. This caused an increase among average native Americans who had even objected to the Irish in former years, and had declared that they lowered the standard of living. There is, however, always a tendency in the ordinary citizen to resent the new arrival, and even in modern times the descendants of the old Dutch families affected to despise the newer Eng. settlers. The Act of 1882, already mentioned was followed by

the Undesirable Persons Act of 1891, providing that every person arriving from abroad was to be examined and prohibited from landing if found to be a convict, lunatic, idiot, epileptic, contagiously diseased person, pauper, polygamist, prostitute, or anarchist. Alien Contract Labour Laws of the '80's and '90's prohibited anyone coming to the States to do any work under contract made before arrival. Exceptions were made in certain artistic professions. In 1921 a Quota Law fixed a definite number of immigrants for each nation, and in 1924 this Act was stiffened. In 1929 Britain was given the lead in its quota, but the total was further reduced. During the financial year 1930-31, 97,000 immigrant aliens were admitted into the U.S., against 241,000 in the previous year. For the first time since the Amer. Civil war, the ann. total was under 100,000; and it was evident that the States had abandoned their historic rôle of giving hospitality to the distressed and persecuted the world over. Of these 97,000, nearly 27,000 were from Canada, 9,000 from Britain, and 7,000 from Ireland. 13,000 came from Italy and 10,000 from Germany. Only 51,000 came in under the quota; the rest were from non-quota countries, chiefly Canada. In 1932, only 35,570 were admitted. The increase of Chinese in America was also regarded with jealousy. It grew with the extension of the railway system, the discovery of gold in California, and the development of the Pacific Coast. The Chinese worked for far lower wages than would support a European, and the agitation against them led Congress to suspend all Chinese I., by a series of Acts ranging from 1882 to recent years. In 1882 there were 130,000 Chinese in the States, but by 1920 only 62,000. They occupied mostly domestic situations, or worked in small shops, canneries, and laundries. Jap. I. to the U.S.A. began in 1869. They entered the country freely until 1908, and numbered 30,000; but the diplomatic measures of the Jap. Gov. reduced the figure, and it was further diminished under Alien Laws. By 1921 it was 7878.

In 1938 the Brit. *emigrants* to the U.S.A. are given as 1992, and in 1947 they had risen to 18,555. It is to be noted that such figures are very easily confused, through certain statistics lumping all passenger traffic together. But it can be stated that the total Brit. tourist movement *by sea* to the U.S.A. in 1917 was 40,559. This compares with 51,000 visitors from the U.S.A. to Britain, recorded in the same year, 1917. There were 3000 from Central and S. America in 1947.

Brit. colonies, or dominions, have generally found it necessary to pass Acts to control I. The Australian Act of 1901 imposed similar tests to those mentioned in connection with Britain and the U.S.A. A language or educational test was included, and rigorous laws and regulations were made as to the employment of Chinese coolies, once engaged largely in the cultivation of sugar-cane in Queens-

land. Similar legislation broadly applies to New Zealand. Other old Acts were the Contract I. Act, 1905, and the Restriction Acts of 1906, 1910, and 1912. New Zealand satisfactorily absorbed large numbers from Britain, and its pop., like that of Australia, became 98 per cent Brit. Excess of immigrants over emigrants was 11,219 in 1913, though by 1928 this balance was reduced to 443. Owing to the loss of 60,000 men in the First World War, a plan was formed in 1920 to recruit and assist immigrants, particularly from Britain. The number of Brit. immigrants into Australia was 77,934 in 1913, 70,271 in 1926, 13,851 in 1928. In 1917 it was 13,012; and 5918 to New Zealand. The official handbook, *Known Australia* (1916) stated that Australia was the first of the countries of the Brit. Commonwealth to announce a full policy of planned I. She had set a target of 70,000 new citizens a year, 'thinking first of Britain and then of Allied countries.' S. Africa passed similar laws to those of Australia. The question of the Chinese became of great importance there, because native labour was insufficient to supply the mining industries. The Brit. Gov. in 1904 passed an ordinance allowing the importation of Chinese labour, which was strongly opposed by the Liberal Party. In 1906 55,000 Chinese coolies were employed in the Rand mines, but the Transvaal Parliament abolished the system, and by 1910 had repatriated all the Chinese. By 1938 S. Africa's I. policy was to attract suitable settlers with capital and there was no demand for unskilled labour from abroad. The figures of Brit. I. into S. Africa were 25,855 in 1913; 30,293 in 1928; 26,142 in 1947. The Canadian Gov. in normal times has offered great inducements, especially to farmers, to settle in Canada, and in 1911 185,000 persons went there from Britain. Subsequent measures of discrimination, like the laws of other countries, reduced the numbers to 83,886 in 1926, 89,571 in 1927, and 95,307 in 1928. In 1929, there were 58,880 Brit. immigrants; in 1930, 61,082, and in 1931, 27,584. Many settlers also go to Canada from the U.S.A. The world-depression of 1930-32 resulted in the cutting down of those figures to a very low point. Jap. were limited severely and Chinese excluded from settling in Canada. (See also EMIGRATION; EMPIRE SETTLEMENT.)

I. on a large scale has taken place to the countries of S. America. In the Argentine Republic, the Homestead Law of 1917 aimed at relieving the irksomeness of isolation in remote districts by placing together people having the same language, customs, and traditions. Most of the immigrants were I. and Sp., and the same preponderance has been true of Brazil. In 1916, the Peron Gov. of the Argentine Republic announced a long-term plan for incomers from European countries, envisaging an influx of millions of immigrants. The problems of the whole subject were studied by the League of Nations, and now absorb some of the attention of U.N.O. It is necessary in

closing to stress the vast complexity which has been added to the subject since the mass movements of refugees prior to the Second World War, and the countless difficulties of the present 'melting-pot' state of peoples throughout the world.

The following are some recent statistics:

U.K. PASSENGER MOVEMENT (including pleasure cruises)

	1938		1947	
	Inwards	Outwards	Inwards	Outwards
<i>By sea.</i>				
Europe . . . . .	1,751,000	1,729,000	1,220,000	1,160,000
Eire . . . . .	513,000	524,000	490,000	472,000
Out of Europe . . . . .	211,000	261,000	182,000	245,000
<i>By air.</i>	108,000	99,000	359,000	402,000
Total : . . . . .	2,616,000	2,616,000	2,251,000	2,279,000

DESTINATION OF BRITISH EMIGRANTS.  
(British nationality only)

	1938	1947
Brit. N. Africa . . . . .	3,367	22,960
Australia . . . . .	5,472	13,012
New Zealand . . . . .	2,425	5,918
Brit. S. Africa . . . . .	6,003	26,142
India and Ceylon . . . . .	5,040	10,376
Other Brit. colonies . . . . .	6,201	19,398
Total Brit. dominions . . . . .	29,008	98,000
U.S.A. . . . .	1,992	18,555
Foreign countries . . . . .	3,144	5,088
Total : . . . . .	34,144	121,643

(Board of Trade Statistics for Sailings from Europe, the Dominions, India etc., and from the U.S.A. inwards to those continents or countries, afford no indication of the number of immigrants as opposed to passengers.)

See J. W. Jenks and W. J. Lauck, *The Emigration Problem*, 1922; Bertrand Russell, *Problem of China*, 1922; J. W. Gregory, *M menace of Colour*, 1925, and *Human Migration* 1928; A. M. MacCLean, *Modern Immigration*, 1925; also Board of Trade *Tables of Emigration and Immigration*; *Board of Trade Journal* (monthly); and *Year Books of British Dominions*.

See also ALIEN; CHINESE LABOUR QUESTION.

Immingham Dock, 5 m. N.W. of Grimsby, was constructed (1906-12) by the Great Central Railway Company on the S. shore of the Humber. It has a capacity of 1,215,000 cubic ft., and an area with adjoining property, of about 1000 ac.

Immortality (Lat. *in*, not, and *mortalis*, mortal, connected with *mors*, death), the continued existence of the human soul after the death of the body. In some form or other, the belief in human I. is practically universal. In even the most primitive animistic cults its influence is clearly discernible, while in all the higher cults it forms an important section of their philosophy. In the more primitive cults we have the provision made for the journeys and sustenance of the departed 'soul,' the

after-life being looked upon as little more than a continuation of the earth-life. An elaborate philosophy of the after-life is found in Egypt, and lengthy accounts are given in the Book of the Dead, telling of the descent of the spirits to the judgment-hall of Osiris. Reproductions of many of the pictures of these scenes are well known.

Among the Indian peoples of the East a different view of the journey after death gave rise to the belief in the transmigration of souls. After death the soul passed into the body of some fresh being, higher or lower in the social scale, according as the life had been good or bad. Buddhism made no alteration in this doctrine, except that it furnished a final goal in the attainment of Nirvana, which, involving as it does the annihilation of personality, can hardly be described as I. It has been disputed whether the Hebs. had any idea of I. before the exile, and there is much in the biblical books which would lead one to suppose that they had not (for varying conceptions of Sheol, see HELL); it is certain that they considered the after-life as at most only a shadow of this life. Among the Hebs., the Persians, and the other Semitic tribes, the idea of I. is generally associated with the resurrection of the body. To the Gks., while many of them (e.g. Socrates, Plato) held the I. of the soul, the resurrection of the body was entirely foreign to their thoughts. The Christian faith teaches both the I. of the soul and the resurrection of the body. St. Paul (1 Cor. xv. 44, etc. and in the First Epistle to the Thessalonians), teaches this clearly, and he also lays stress on the important fact that the resurrection-body is not carnal, but spiritual. See S. Salmond, *Christian Doctrine of Immortality* (4th ed.), 1901; R. Charles, *Critical History of the Doctrine of a Future Life*, 1897; J. Erdmann's *History of Philosophy* (vol. vi., *Since Hegel*), 1921; J. G. Frazer, *Man, God, and Immortality*, 1927; J. Baillic, *In the Life Everlasting*, 1931; H. Keyserling, *Immortality* (trans. 1938).

Immortality (in law). Corporations (*q.v.*) (including the king, who is legally a corporation sole) are, in law, incapable of dying. This is one of the reasons for the old mortmain statutes which were directed against the conveyance of lands to eccles., corporations, 'being against the policy of the law to allow land so to be tied up in perpetual ownership as to restrict the probability of its free circulation. The death of the reigning monarch is constitutionally merely an event which results in the immediate demise of the crown,

though formerly there was a real interregnum between the death of one king and the election and coronation of his successor; with the result that the state had, in the interval, no one to represent it for the purpose of maintaining order. But this fictitious I. of the king did not get rid of the rule that Parliament was necessarily dissolved by the death of the king, although it was appreciated that the consequences of a sudden and automatic dissolution were highly inconvenient, especially in regard to taxes, the collection of which could not be enforced in the absence of a proper authorisation. It was not till 1837 that an Act was passed providing for the continued existence of Parliament for six months after the death of the king unless sooner dissolved by his successor. For the other legal and constitutional effects of this attribute of I. in the king see CROWN.

**Immortelles**, see EVERLASTING FLOWERS.

**Immunity from Disease**, see BACTERIA—Immunity.

**Imola**, tn. of Italy in the prov. of Bologna, situated on the R. Santerno. It is on the site of the Rom. tn. Forum Cornelia. The cathedral dates from 1187, but was rebuilt in the eighteenth century. There is an anc. citadel and a fifteenth-century palace. It has a considerable trade in wine. In the second World War the cathedral, the church of St. Dominic, the church of S. Maria in Regola, the civic museum and the Paterlini Palace were all slightly damaged by bombardment, but, generally speaking, the tn. did not suffer very severely. Pop. 41,500.

**Imoschi**, Omotski, or Imoski, tn. of Yugo-Slavia, situated in Bosnia and Herzegovina, 30 m. N.W. of Mostar. Pop. about 40,000.

**Impact**, the collision between bodies. The mathematical theory of the subject is not concerned with cases in which the I. results in the destruction of either of the bodies. When two bodies impinge, the time of I. may be divided into two parts—the first known as the time of *compression*, during which even the hardest bodies suffer temporary loss of shape at the point of impact; and the second, the time of *restitution*, during which the natural shape is regained. The more elastic bodies are those which exert a greater effort to recover their shape; hence they rebound further. An *inelastic* body is one which makes no effort to regain its shape, which is permanently altered by I. In actual practice, no perfectly inelastic bodies have been found; but a lump of putty is an approximate example. A common experiment to illustrate this loss of shape in the case of a hard body is made by dropping an ivory ball on to a greased marble surface. A circle of distinct size is found to be made, and a still larger circle if the ball is dropped from a greater height.

Newton found that the relative velocity of two bodies after a direct I. is in a constant ratio to the relative velocity before I., and is in the opposite direction. This ratio has been found experimentally for various pairs of substances in

contact. It is known as the *coefficient of restitution*, and in mathematical formulæ is denoted by  $e$ . Thus for two glass solids  $e = 0.94$ , for two ivory solids 0.8, and for one of iron and one of lead 0.13. The example given first approximates as nearly as anything else in practice to a state of perfect elasticity. The mathematical theory is based in the first place on considerations of the I. of smooth spheres and planes. When the surfaces in contact are rough, and the I. is not direct, rotations are set up, and the results have to be modified. First consider the direct I. of two spheres that is, two spheres which impinge in such a way that their line of centres is the same as the then two lines of motion. Let  $m, m_1$  be their masses,  $u, u_1$  their velocities before I., and  $v, v_1$  their velocities after I. All velocities are measured in the same direction, and if the spheres are moving in opposite directions  $u$  or  $u_1$  will be negative. Since at I. the impulse received by one body is equal and opposite to that received by the other, the momenta received are equal and opposite. Hence the total momentum in either direction in the line of motion is unaltered by I. Hence follows the equation  $mu + m_1u_1 = mv + m_1v_1$ . Again, Newton's Experimental Law states that the relative velocity after I. is equal to  $e$  times the relative velocity before. Hence  $v - v_1 = -e(u - u_1)$ . These two equations are then sufficient to determine  $v$  and  $v_1$ , the velocities with which the bodies move off after I. Thus, in particular, a ball falling to the ground with velocity  $u$  rebounds with velocity  $eu$ . It will rebound a second time with velocity  $e^2u$ , and so on. When the I. is oblique, the components of the initial velocities perpendicular to the line of centres at I. are unaltered. This gives two equations stated above hold equally for the components of the initial velocities resolved along the line of centres, and hence there are four equations which will determine the two new velocities and the new directions after impact. In the former case, the kinetic energy before impact is  $\frac{1}{2}mu^2 + \frac{1}{2}m_1u_1^2$ , and after impact is  $\frac{1}{2}mv^2 + \frac{1}{2}m_1v_1^2$ . The two equations give  $(\frac{1}{2}mu^2 + \frac{1}{2}m_1u_1^2) - (\frac{1}{2}mv^2 + \frac{1}{2}m_1v_1^2) = \frac{1}{2} \frac{m m_1}{m + m_1} (u - u_1)^2$ . Hence this expression represents the kinetic energy lost by the I. It chiefly reappears in the form of heat.

**Impanation**, literally embodiment in bread (Lat. *panis*), a theological or eccles. term adopted by some of the earlier Protestants and used in the controversies in regard to the Real Presence of Christ's body in the bread of the Eucharist. It is applied to a local presence or inclusion of Christ's body in the bread after consecration, 'an hypostatical and personal union of the bread with Christ's body.' It differs from Transubstantiation (q.v.), and has sometimes been used loosely as equivalent to Consubstantiation.

**Impatiens**, large genus of balsaminaceous plants which occurs in warm and tropical countries, and is so called from the sudden and elastic force with which the



species burst their capsules. *I. balsamina*, the common balsam, is well known in Brit. conservatories, and *I. Noli-melangere*, the touch-me-not, is also a common plant. The valves of the capsule roll inwards when touched, or fully ripe, jerking out the seeds, and the plant emits an unpleasant odour.

**Impeachment**, arraignment before the High Court of Parliament of a minister of state for high crimes and misdemeanours. The first recorded exercise of the power was in the reign of Edward III., when Latimer and Neville were impeached for the fraudulent purchase of crown debts and for removing the staple from Calais. It is a judicial proceeding in which the Commons act as accusers and the Lords, in pursuance of the long settled rule that the judicial powers of Parliament are vested exclusively in the Upper Chamber, as Judges. A member of the House of Commons moves the *I.* in the first instance, and if the motion is carried the accused is impeached by a deputation of members at the bar of the House of Lords. Articles of *I.* are drawn up and copies submitted to the lords and to the accused. The bar then arrested and detained in the custody of the Black Rod. The prosecution is conducted by certain of the commoners, who are styled managers. The Lords deliver a verdict 'upon their honour,' and where a verdict of guilty is found sentence is not passed until the accusers demand it. The prisoner may move the court in arrest of judgment. The Act of Settlement provides that no pardon from the crown can be pleaded to an *I.* Where the accused is a peer, the Lord High Steward (*q.v.*) presides, where a commoner, the Lord Chancellor. *I.* is now virtually obsolete. Public opinion has for years been a far stronger inducement to ministers not to abuse their powers than the terrors of an *I.* Formerly, however, it was a valuable weapon in the hands of the House of Commons for controlling the actions of the crown ministers. But there is no doubt whatever that the power was grossly abused. Ministers were often impeached for reasons which in these days would merely form ground for strong party differences. Perhaps the most famous case of *I.* was that of Lord Chancellor Bacon on a charge of receiving bribes. This *I.* was important in that it re-affirmed the right of the Commons to hold ministers responsible for their acts to the nation. The *I.* of George Villiers, duke of Buckingham in 1626, and Thomas Wentworth, earl of Strafford in 1626 and, Archbishop Laud in 1640 seem in modern eyes to do no more than exemplify the varying fortunes of party warfare. One of the specific charges against Buckingham was that of accumulating offices. In these days patronage in one form or another is a frequent subject of hostile party and Press comment, but the law officers of the crown would hardly suggest an *I.* Both Wentworth and Laud were accused of trying to subvert the fundamental laws of the realm, but the comprehensiveness of the charge does not alter the fact that Wentworth's foreign policy and Laud's papist

views and sympathies did not happen to meet with the approval of a stern Puritan parliament. The last *I.* were those of Warren Hastings in 1788 and Lord Melville in 1806 for alleged malversation of office. But even before that time the principle of ministerial responsibility (*see* CABINET; GOVERNMENT) to Parliament had become what it now is—the fundamental safeguard of the whole principle of representation.

The procedure on *I.* is similar in the U.S.A., in which country the most famous case was that of President Johnson, in 1868.

**Impenetrability** is generally accepted as one of the properties of matter, viz. that two different portions of matter cannot occupy the same space at the same time. When a nail is knocked into a piece of wood, it takes up its new position by displacing certain particles of the wood. Many experiments were made to disprove the theory, notably one, in which a metal globe was completely filled with water and then compressed until the outside was seen to be covered with moisture. But this was explained as merely proving that particles of water could be forced between the particles of metal. A pint of water and a pint of alcohol make a mixture of less than two pints, but this is due to the fact that in the mixture the molecules are closer to one another. On the other hand, the many theories recently advanced of the composition of atoms make it doubtful whether they possess the property of *I.*

**Imperator**, passenger and mail steamer of the Hamburg-American Line, launched by the Kaiser Wilhelm II. in 1913, but later called the *Berengaria* (*q.v.*).

**Imperator**, in Rom. hist. the title given, in the republican period, to the victorious general and laid aside with the surrender of the military command; but, in 46 A.D., conferred on Caesar for life. Caesar bore it at first as governor of Gaul in the usual way; but the retention of the title after the termination of his generalship and the celebration of his triumph, was new. Here was laid ground for a distinction between the permanent title, which was subsequently prefixed to the name, and that which was temporary and therefore capable of repetition, which was placed after the name. But Caesar, even when he had been called in the former sense, *imperator* once for all, was yet after the gaining of victories, saluted by acclamation on the battlefield as *imperator*; he never bore the title, however, prefixed to his name, but called himself and made others call him simply *Cæsar imperator*—without adding any sign of repetition (*see* Mommson, *History of Rome*, vol. IV.).

**Imperia** (formerly **Porto Maurizio**) (1) Mountainous prov. of Italy, bounded on the S. by the Mediterranean. It has an area of 455 sq. m., and produces fruit, wine, and olives. Pop. 148,000. (2) A city of Liguria, cap. of the above prov., on the Ligurian Sea, about 46 m. from Nice and 2 m. from Oneglia, with which it forms one commune with a pop. of 28,600. It is famous for its olive oil.

**Imperial Air Routes.** *see* AIR MAIL, etc.  
**Imperial Airways,** the name of the body formed, in 1921, by the four Brit. air-lines—Handley-Page Transport, Instone Air Line, Daimler Airway, and the British Marine Air Navigation Company. The board comprised representatives from the absorbed coys. together with directors appointed by the gov. Under the Brit. Overseas Airways Act the British Overseas Airways Corporation came into being in 1939, with 3 members appointed by the Secretary of State for Air; and in the following year the new corporation acquired the undertaking of I. A. and of British Airways Ltd.

**Imperial Bureau of Mycology,** *see* IMPERIAL MYCOLOGICAL INSTITUTE.

**Imperial Canal,** *see* GRAND CANAL.

**Imperial Chemical Industries, Ltd.** A great combine which controls a large number of other concerns, the chief of which are British Copper Manufacturers; British Dyestuffs Corporation; Brunner, Mond & Co.; Cassel Cyanide Co.; Castner-Kellner Alkali Co.; Excelsior Motor Radiator Co.; Imperial Chemicals Insurance; Kynoch Ltd.; Nobel (Australasia), Ltd.; Nobel's Explosives Co.; Sedgwick Gunpowder Co., and Welsbach Light Co. Its authorised capital is £95,000,000, and its chief productions are acids, alkali, ammonia, artificial leather, chemicals, cycles; and motor cycles, detonators, dyestuffs, explosives, fertilisers, lime, non-ferrous metals, and safety fuses. The first chairman was the late Lord Melchett (q.v.); the present chairman is Lord McGowan. The chief offices are Imperial Chemicals House, Millbank, London, S.W. (present office: North House, Buckingham Gate, London, S.W. 1). Judged by world standards, I.C.I., with a normal estab. of 70,000 employees, is only comparable with similar chemical organisations in the U.S.A., but small indeed compared with the I. G. Farben of Germany and the State Corporation of Russia. The company's achievements in the invention and development of products and processes were of direct importance in the national war effort. Thus the company turned out half a million tons of sulphate of ammonia a year—essential to fertilisers and to the 'grow more food' campaign. During the war almost 400,000 tons of explosives were made in the coy.'s factories besides hundreds of millions of detonators, fuses, and incendiary bombs. I.C.I.'s greatest contribution in the field of special weapons was the Projector, Infantry, Anti-tank Gun, better known as the P.I.A.T. and the most effective weapon of the infantry against tanks or fortifications. Another weapon was the 'flying dustbin,' which, mounted on a tank, helped to blast a way through the West Wall and the fortified vil. of Normandy in 1944. On the coy. fell the burden of producing small arms ammunition until new gov. factories could be built; by the end of 1944 they had turned out over 3500 million rounds. They were also responsible for developing mass-production methods for the small arms incendiary bullet—a weapon which completely surprised the Gers. and caused

them great losses of aircraft at a critical stage in the war. The cupro-nickel condenser tube was a notable contribution to the increased fighting efficiency of Britain in the war and a large number of the bigger warships were fitted with tubes made by the I.C.I. A new factory was built to make metal fuel tanks for aircraft and, later, technicians developed the technique of making the tanks bullet-proof. Plastic materials were in great demand for war in the air; the coy.'s invention of 'Perspex' (*see* CHEMISTRY; PLASTICS) was widely used as a non-splintering glazing material for aircraft. Polyvinyl chloride, another plastic, was useful to replace rubber in flexible cable coverings. An outstanding achievement in the field of plastics was the discovery of polythene or polymerised ethylene. It proved to be a valuable insulating material for high-frequency radio and television. Without polythene, Radar could never have been developed so rapidly or so efficiently.

**Imperial College of Science and Technology,** a federation of three institutions: the Royal College of Science, the Royal School of Mines, and the Central Technical College of the City and Guilds of London (essentially a school of engineering), situated in S. Kensington. In 1906 an official committee proposed that these three institutions should be brought together in such a way as to establish at S. Kensington 'an institution or group of associated colleges of science and technology where the highest specialised instruction should be given and where the fullest equipment for the most advanced training and research should be provided, in various branches of science, especially in its application to industry.' Their report resulted in the creation of the I. C. of S. and T., with the three above mentioned institutions as its constituents, the college as a whole being a school of the Univ. of London. Its predominant function in the sciences, mining, metallurgy, and engineering, is to train students for direct service in industry and agriculture.

The above mentioned institutions were themselves related to yet earlier institutions from which, accordingly, the I.C. can claim descent. The earliest of all was the Royal College of Chemistry, and the Royal College of Science has its origin in the incorporation in 1853 of the gov. School of Mines and of Science applied to the Arts with the still older Royal College of Chemistry. Brit. chem. owes much to the enthusiasm of those who, a century ago, saw their country's need of laboratories like those of Liebig and of Wöhler at Gießen and at Göttingen, and endeavoured to obtain support for a new institution to be named the Davy College of Practical Chemistry. In 1843 they came near to success in an attempt to secure accommodation in the Royal Institution; and in 1845, when that had failed, they organised a campaign of publicity among all classes. Their efforts were successful, for a constitution was given to the college; its first council was elected and Prince Albert became its first president. It was opened, as a private venture to students in Ock.,

1845, in George Street, Hanover Square, and on Dec. 9 its title was changed to The Royal College of Chemistry. The first prof. of this college was August Wilhelm von Hofmann, then a 'privat docent' at Bonn. Hofmann stayed till 1863 when he was appointed prof. of chem. in the Univ. of Berlin. In Hofmann's first year of office the college moved from its temporary quarters in George Street to a new building in Oxford Street. The college was, as stated above, incorporated with the Government School of Mines and of Science applied to the Arts (founded in 1851, by de la Beche, the famous Eng. geologist (*q.v.*), on a site between Jernyn Street and Piccadilly), and later to become the Royal School of Mines and, at S. Kensington in 1881, the Normal School (ultimately the Royal College) of Science. Assisted by Lyon Playfair Prince Albert secured the purchase, with funds at the disposal of the Commissioners of the Exhibition of 1851, of the site in S. Kensington on which the Imperial College now stands. It was Prince Albert's initiative in urging the holding of the great Exhibition, against public opposition and without much initial support from industry, that was largely responsible for the fact that the commissioners had funds to spend on endowing the arts and sciences in this and other ways. The third constituent institution of the I.C., the City and Guilds College, owes its being to the corporation and Livery Companies of the City of London.

But the steps whereby all three constituent institutions came at last to be associated at S. Kensington is a complex one, which may only be disentangled from numerous letters, memoranda, and departmental minutes, many of which are eloquent of divergent aims and interests. The major opposition was that which lasted from 1851 to 1881, between Huxley and the Science and Art Department on the one hand, and the 'mining school party' led by Murchison, Percy and Warrington Smyth on the other. Huxley's party wanted a great metropolitan school covering all branches of applied science, but the other party feared that extensions would hinder the development of de la Beche's school in Jernyn Street and lose its affiliation with his Museum of Practical Geology. But these divergencies were gradually reconciled, particularly as accommodation became more commensurate with the teaching given. The fluctuations of this story are shown in the ceaseless changes in the names attached to the constituent colleges, and it was not until 1907 that the three came to have their present names. The I. C. of S. and T. is a 'peak institution' comparable with the Massachusetts Institute of Technology, and the 'alliance' concluded with that institution in 1944 was a recognition of community of aims and interests. Its Charter estab. it 'as a School of the University of London' and its Visitor is the king.

The Charter of the college provides that, subject to agreement with the authorities of any college or other institution, the

governing body may recognise that college or institution or any dept. of it as being in association with the I. C. for all or any of the purposes of the Royal Charter of 1907, but no such resolution is to be operative until allowed by the King in Council. The Dept. of Metallurgy of the Univ. of Sheffield has been so recognised for the Advanced Metallurgy of Iron and Steel.

The I. C. is organised into these depts.: aeronautics (including aerodynamics); biological depts. (including biochem., botan., and zoology); chem. technology (including chemical engineering, fuel and refractory materials, applied physical chem.); chemistry (including organic chem., inorganic chem., physical chem., agricultural chem., and the chem. of food and drugs); engineering, mechanical and motive power; engineering, civil and surveying (including highway engineering); engineering, electrical; engineering, chem.; geology (including mining geology and oil technology); mathematics and mechanics; metallurgy; mining (including mining surveying); physics (including astrophysics, technical optics, instrument design, meteorology, and applied geophysics).

The administration is vested in a governing body of forty-seven members representing the Crown, India, the self-governing Dominions, the Board of Education, the Univ. of London, the London Co. Council, the City and Guilds of London Institute, the Royal Commissioners for the Exhibition of 1851, the Royal Society, the Professorial Staff of the Imperial College, and the learned societies concerned with industries. The Rector, as chief administrative officer of the I. C., for the time being, is also a member.

**Imperial College of Tropical Agriculture**, incorporated in 1921 as the outcome of recommendations made in their report by a committee appointed by Lord Milner in 1919 (*see* Cmd. 362). The object of the college is to promote the study of tropical agriculture in suitable surroundings, and to create a body of Brit. expert agriculturists well versed in the knowledge of the cultivation of land in the tropics, of chemists, and of scientific advisers possessing an intimate knowledge of the means of combating pests and diseases and to conduct research. The college buildings are at St. Augustine, near St. Joseph, Trinidad. The funds are derived from contributions from colonies and industries participating in the movement and an imperial grant. The Imperial Dept. of Agriculture founded in 1898 was amalgamated with the college in 1922. Post-graduate courses are open to holders of a degree or diploma of any Brit. univ. or other academic institution approved by the governing body of the college. Refresher courses are open to officers of agric. depts. in the tropics, or similar institutions. There is also a three-year diploma course primarily intended to give instruction in W. Indian agriculture, besides a two-year course in sugar technology.

**Imperial Communications Advisory Committee**, constituted in July, 1929, on

the recommendation of the Imperial Wireless and Cable Conference, 1928, to act in an advisory capacity in regard to telegraphic communications. The formation of the Committee may be regarded as the corollary to the merger of cable and wireless interests which took place in 1928. It is composed of eight members representing the Home and Dominion Govts., Colonies and Protectorates, and it is charged with certain responsibilities relating to the activities of Imperial and International Communications Limited—the public utility company which was formed in accordance with the recommendations of the Conference previously mentioned, for the purpose of co-ordinating the telegraphic services (cable and wireless) connecting the various parts of the Brit. Empire. The Committee is concerned with questions of policy regarding, in particular, the institution of new services, the discontinuance of existing services, and the distribution of traffic between alternative routes. In 1944, on the nationalisation of the Cable and Wireless Company, the I.C.A.C. became the Commonwealth Communications Council, its former duties being somewhat extended owing to the nationalisation of the Company. The Council will probably disappear in its turn, to be replaced by the Telecommunications Board.

**Imperial Conference**, constituted by resolution of the Colonial Conference of 1907 to the effect that such a conference should be held every four years for the discussion of questions of common interest as between the Brit. gov. and the govts. of the self-governing Dominions beyond the seas. The Prime Minister of the United Kingdom acts as *ex-officio* president, and the Prime Ministers of the Dominions are *ex-officio* members; the Secretary of State for Commonwealth Relations (formerly Secretary of State for Dominion Affairs) is also an *ex-officio* member and deputy president; and, in addition, such other ministers as the respective govts. may appoint may also be members. Except by special permission of the conferences, each discussion is conducted by not more than two representatives from each gov., and each gov. has only one vote. A resolution was passed in 1917 to allow of India being fully represented. The Irish Free State (later Eire) was first represented at the I. C. of 1923. There is a permanent secretarial staff under the Secretary of State for Commonwealth Relations, appointed to keep the sev. govts. informed during the periods between the conferences in regard to matters which may come up for discussion. The I. C. grew out of the Colonial Conferences, of which there were four prior to that of 1907—three in London and one in Ottawa. At the first, held in 1887, the most prominent question was the organisation of Colonial defence, and an important agreement was arrived at for the augmentation of the Australasian squadron. Other questions discussed were mail service, Imperial penny post, and the enforcement of colonial judgments. The question of trade and communica-

tions between the colonies (they were not then styled 'dominions') and between the colonies and the mother country was considered at the Colonial Conference held at Ottawa in 1891. At that conference the decision was taken to lay a cable between Canada and Australia, work on which was begun in 1902. At the conference of 1897 Imperial preference was the chief question, and Imperial defence also received much attention, Cape Colony contributing money for a first-class battleship. In 1902, the year of King Edward VII.'s coronation, advantage was taken of the presence in London of Colonial Premiers to discuss the political and commercial relations of the Empire and its naval and military defence. Then came the Colonial Conference of 1907 (which passed the resolution mentioned at the opening of this article), in which the Prime Ministers of all the self-governing colonies took part, including the Transvaal, where the first elections under responsible gov. had just taken place. At this conference all the members except the gov. of the United Kingdom re-affirmed the resolutions of the 1902 conference on preferential trade within the Empire; but the gov. of the United Kingdom was unable to admit either the necessity or the expediency of altering the fiscal system of the United Kingdom. In 1909 a Defence Conference was held in consequence of parl. discussions on the naval position, and as a result of the conference various dominions placed orders for cruisers or made financial contributions.

The first conference which was officially styled 'Imperial' was held in May, June, 1911, the chief questions considered being the constitution of the conference, inter-imperial consultation regarding Treaties, migration, naturalisation, the treatment of Brit. Indians in the Dominions, cable communications, and uniform treatment of Brit. shipping. Arising out of this conference a Royal Commission was appointed to report on the natural resources and trade of the Empire, and the work of this Commission has undoubtedly acted as a stimulus in this direction ever since (see also *EMPIRE, MYSTIC AND BOYD*; *IMPERIAL INSTITUTE*; *IMPERIAL ECONOMIC COMMISSION*). During the First World War the normal I. C. was postponed and overseas representatives were temporarily made members of the War Cabinet (see *CABINET, IMPERIAL WAR*). At the Imperial War Conference of 1918, apart from confidential deliberations on the prosecution of the war, the most important resolutions dealt with the future economic policy of the Empire respecting raw materials. At the close of hostilities in 1918 representatives of all the self-governing dominions were immediately summoned to take part in the discussions in London over the peace negotiations, and also in the work of the Peace Conference in Paris. There was also a Conference of Prime Ministers and representatives of the United Kingdom and the dominions and India held in London in 1921 under Mr. Lloyd George. The Conference considered in detail the foreign policy of the Empire with special

reference to the League of Nations, which had not then been formed, and several meetings were devoted to discussing the naval, military, and air defence of the Empire. The I.C. of 1923 reached a common understanding on the main heads of foreign policy, subject (as always) in the case of resolutions by an I.C. to ratification by their respective governments. In that year an Imperial Economic Conference was held to consider in detail the economic relations between the various parts of the Empire and all aspects of Imperial trade, including Imperial preference (q.v.), overseas settlement (q.v.), co-operation in financial assistance to Imperial development, the Imperial Institute (q.v.), and the establishment of an Imperial Economic Committee (q.v.).

A large part of the work of the I.C. of Oct. 1926 consisted of the discussion of questions affecting Inter-Imperial Relations, which were referred to a committee of Prime Ministers and heads of delegations presided over by Lord Balfour (see INTER-IMPERIAL RELATIONS, REPORT). Arising out of this conference a conference on the operation of dominion legislation and merchant shipping was held in London in Oct. 1927 (see COLONIAL LAW). Once again the subject of inter-imperial relations figured prominently in the I.C. of 1930, and discussion was renewed on the Report of the conference on the Operation of Dominion Legislation which had its sequel in the Statute of Westminster, which received the royal assent on Dec. 11, 1931 (see WESTMINSTER STATUTE OF 1931, and also GOVERNMENT GENERAL). In the sphere of foreign affairs the main task before the 1930 conference was the discussion of the means by which the members of the British Commonwealth could best co-operate in promoting disarmament and world peace. On the economic side the conference discussed the methods appropriate to the development of inter-imperial trade, but no statement of policy was made on behalf of the government of the United Kingdom, chiefly because no policy would have satisfied the Dominions which did not involve a radical change in the fiscal policy of the United Kingdom. But by 1932 Britain had reverted to a protectionist system and, thus strengthened, it was able though not without some difficulty to conclude a series of trade agreements with the various dominion delegations who had assembled at the Imperial Economic Conference in Ottawa, 1932 (see OTTAWA CONFERENCE). Advantage was taken of the presence of the Dominion Prime Ministers in London for the coronation of George VI. to hold an I.C., which was opened on May 11, 1937. The Conference adopted a revised form of the Coronation Oath as marking the recognition of the principles underlying the British Commonwealth of Nations. The Conference dealt mainly with foreign affairs and defence—it being obvious that the international situation was rapidly deteriorating. On defence, the conference discussed the ways in which it would be possible for the various governments to co-operate in measures for their own security, including co-operation in the production

and supply of munitions and raw materials as well as of food and feeding stuffs. Detailed consideration on these and other matters was referred to technical committees. Certain constitutional questions were raised by the S. African Gov. (see SOUTH AFRICA, UNION OF, *History*), whose chief representative, Gen. Hertzog (q.v.) sought to carry the Statute of Westminster (q.v.) beyond its implications. It is not without interest to note that, on the outbreak of Second World War Gen. Hertzog soon ceased to be the national leader. A report on treaty procedure, issued through this I.C., recognised that each member of the Commonwealth taking part in a multilateral treaty is in the absence of provision to the contrary, not responsible for the obligations undertaken by any other member. There can be but little doubt that these I.C.s are too slow and far between. This inactivity, combined with remoteness, necessitates that centrifugal tendencies which is implicit in a widely scattered Empire and the existing method of consultation through high commissioners obviously lacks the effectiveness which can come only through publicity and constant use of public opinion. A meeting

of the prime ministers of the various countries of the Commonwealth was held in London in April 1944 to consider the constitutional issues arising from India's decision to adopt a republican form of constitution and her desire to continue her membership of the Commonwealth. An agreement enabling India to continue her membership of the Commonwealth was concluded on April 27. While independent republic India accepted the king as the symbol of the free association of the independent member nations and as such the Head of the Commonwealth. The basis of the membership of the other Commonwealth countries remained unchanged.

**Imperial Defence, College of** formed in London in 1926 to create a basis for co-ordination and co-ordination by training for and in organisation of Imperial Defence. The formation of an Imperial Defence Staff, assisted by a committee of Imperial Defence may be regarded as the basis of this general idea. The college is under the command of a representative officer of the Navy, Army and Air Force in rotation. It has an instructional staff of military graduates and at present takes about 90 students drawn from the Navy, Army, Air Force, Indian Army, and Dominion forces who are trained in Imperial Defence.

**Imperial Defence Committee**, see COMMISSION OF IMPERIAL DEFENCE.

**Imperial Economic Committee**, established in 1926. The functions of the committee were extended by the Imperial Conferences of 1926 and 1930 and again as the result of the Report of the Imperial Committee on Economic Consultation and Co-operation in 1933. Its present functions are to complete investigations into the possibility of improving the methods of preparing for market, and marketing within the United Kingdom the food products of the overseas parts of the Empire, with a view

to increasing the consumption of such products in the United Kingdom in preference to imports from foreign countries, and to promote the interests of both producers and consumers to undertake inquiries into the production for export and marketing in various parts of the world of the raw materials of the Empire to procure preliminary surveys of any branch of empire trade and marketing to report on any economic question which the governments of the Commonwealth may agree to refer to the Committee to undertake services transferred from the Empire Marketing Board (q.v.) viz. periodical market intelligence notes and world surveys of production and trade and to make proposals to governments in regard to other economic services which in their view should be conducted on a co-operative basis. It being understood that this does not give the Committee any power to initiate proposals regarding consultation in respect of economic policy. The Committee consists of twenty members nominated by their respective governments. It is financed by contributions from all the governments of the Commonwealth, and it reports to those governments.

**Imperial Institute.** The I.I. building was erected at St. Kensington as the national memorial of the jubilee of Queen Victoria, by whom it was opened in 1893. The principal object of the I.I. is 'to promote the utilisation of the commercial and industrial resources of the Empire by the chemical and technical investigation of raw materials by the supply of information relating to such materials and their production and by the maintenance of comprehensive exhibits illustrating the economic resources of all the countries of the Empire overseas'. In 1902 the Institute was placed under the Board of Trade by Act of Parliament, in 1907 the Colonial Office assumed the management with the Board of Trade and in 1916 was placed under statutory control by the Imperial Institute (Management) Act of 1916. In 1921 an Act was passed repealing the previous Acts, and transferring the Institute to the control of the First Secretary of the Dept. of Overseas Trade, and providing for its management under that minister by a Board of Governors, and for the amalgamation of the Imperial Mineral Products Bureau with the Institute. The Institute co-operates with the Agric., Mines and other technical departments in the Empire overseas, by undertaking investigations relating to the composition, uses, and commercial value of products which can be more efficiently conducted at home in consultation with merchants and manufacturers, with a view to the local utilisation of the products or their export. It has laboratories for the examination of rubber, cement, and ceramic materials. Samples of raw materials investigated can be inspected by interested inquirers. For the investigation and inquiry work of the Institute two departments have been formed, viz. Plant and Animal Products, and Mineral Resources. A feature of the I.I. is its fine public exhibition galleries. The collections in these galleries are supplied

chiefly through the governments of the countries concerned, and every part of the British Empire is represented. The general public



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of the I.I. include the *Publication of the Imperial Institute*, issued quarterly, a series of handbooks dealing with the commercial resources of the tropics, and various reports.

**Imperial Institute of Entomology.** founded in 1913 to encourage and co-ordinate entomological work throughout the Empire in relation both to human and animal diseases and to agriculture. It was known as the Imperial Bureau of Entomology until 1930. The head office is at the Brit. Museum (Natural Hist.) (Cromwell Road London, S.W.). The Institute absorbed the Entomological Research Committee appointed in 1909 with the object of furthering the study of economic entomology particularly in the Brit. Tropical African Colonies and Protectorates. The Institute publishes a quarterly bulletin entitled *The Bulletin of Entomological Research* and a monthly review entitled *The Review of Applied Entomology* which summarises all current entomological literature bearing on injurious insects.

**Imperialism.** In a general sense it means merely a system of gov. under an



these ideas, and a series of protected nationalities arose. Eventually, the two principles, nationality and I., though strikingly analogous, are arrayed against each other. Britain conquers; 'but by the testimony of men of all races who have found refuge within her confines, she conquers less for herself than for humanity.' It is this, the modern I. which has insensibly but surely taken the place of the anct. or narrower patriotism of England.

The Brit. Empire has certainly shown great stability in tumultuous times. Five empires were involved in the First World War, and only the Brit. empire survived it. After that war the Brit. Empire adapted itself to the post-war age by a process of discussion and agreement and law-making, and by enlarging instead of destroying old freedoms. This is peculiarly exemplified in the development of dominion status (q.v.) through successive imperial conferences.

Left-Wing extremists, who dislike the Empire in the form in which some 'imperialists' represent it regard it as merely the instrument of 'economic imperialism' and all Brit. professions of 'trusteeship' for the backward races as hypocrisy. They used to aver for example that vested interests were the sole obstacle to the prompt concession of absolute independence to India. But extremism is never likely to be a formidable danger, and the risk, such as it is, lies rather in indifference or misunderstanding among men of goodwill as to the meaning of the empire and the value of maintaining it. For many such the cause that fills their hearts in this post-war era is the cause of international friendship and co-operation; and they feel that "imperialism," however transmuted is somehow out of tune with "internationalism."

The fact too that the Brit. flag flies over so great a part of the backward regions of the world is bound to excite the jealousy and cupidity of other nations. The reply to these questionings is that the Brit. Empire serves not only the interests of its own members, but also those of the world as a whole. As the world is at present constituted, no international order can achieve its purpose without sacrifice of national self-determination greater than the tried-out collective system ventured to demand. In the meantime, 'it would be a fatal blunder to dissolve the international unity of our lesser league within the League' (R. Coupland). The course of events in the Second World War confirms the case made for the Brit. Empire by both Professor Cramb and Professor Coupland and by many others. See J. A. Cramb, *The Origins and Destiny of Imperial Britain*, 1915; Sir C. P. Lucas, *The British Empire, 1500-1930*, 1899, 1931; S. Leacock, *Our British Empire*, 1940; Sir R. Coupland, *The Empire in these days*, 1935; R. Muir, *The British Empire: How it Grew and How it Works*, 1940.

Imperial Mycological Institute, founded in 1920 and formerly known as the Imperial Bureau of Mycology. It was

the outcome of a proposal adopted by the Imperial War Conference in 1918, that a central organisation should be estab. for the encouragement and co-ordination of work throughout the Empire on the diseases of plants caused by fungi. Since 1933 the Institute has been under the control of the executive council of the Imperial Agricultural Bureau. Its work on the diseases of plants caused by fungi is broadly on the same lines as that of the Imperial Institute of Entomology (q.v.) in regard to insects. Its primary function is to assist economic mycologists in the overseas Empire by the accumulation and distribution of information on all matters connected with plant diseases and by the identification of specimens.

**Imperial Preference** is the title given to that policy by which the sev. members within the Brit. Commonwealth of nations would impose tariffs to the disadvantage of those countries without the Commonwealth and to their own mutual advantage. The Corn Laws (q.v.) had produced an ardent body of free traders led by Richard Cobden and John Bright, and their efforts led to the repeal of the Corn Laws in 1848. From that time until 1932 Britain was a free-trade country—apart from the levying of the McKenna duties (q.v.) and the tariffs imposed on certain 'key' industries. With the spread of imperialism in the eighties of last century came the spread of this idea of I. P., and in the early years of the twentieth century Joseph Chamberlain led a great but unsuccessful movement for the conversion of his countrymen to the policy of protection, with preference to the various members of the Brit. Empire. This policy was also advocated by Bonar Law both before and during his premiership. The movement was carried on by Lord Beaverbrook (q.v.), who founded and fostered in 1930 an Empire Crusaders Party with the avowed object of making Empire Preference a reality.

Under the Import Duties Act, 1932, a ten per cent *ad valorem* duty was imposed on a wide range of imports, but free entry was given to all Dominion imports, and this freedom of entry was continued under the reciprocal trade agreements made after the Ottawa Conference (q.v.), of July, 1932. These agreements, which have been considerably modified provide for a tariff on a number of foreign primary products for the benefit of similar Dominion products, and reciprocal tariffs against foreign manufacturers for the benefit of the U.K. manufactured goods in the mkt.s. of the dominions. Preferences are also granted to Brit. colonial goods, and also by many colonies to U.K. goods.

**Imperial Service Order**, name of a decoration confined to members of the Brit. Civil Service and consisting of the Sovereign, the Prince of Wales, and Companies to a number not exceeding 700, of whom 250 may belong to the Home Service, 200 to the Indian—100 European and 100 Indian—and 250 to the services of the Dominions, Colonies and Protectorates. Long and meritorious service in either a clerical or administrative capacity is the qualification for the order. King



Edward VII founded the order in 1902, when the number was limited to 425. It was enlarged in 1912.

**Imperial Tobacco Company (of Great Britain and Ireland), Limited**, was formed in 1901, when some of the leading Brit. tobacco manufacturers joined forces to resist an attempt by a powerful association of Amer. manufacturers to capture the Brit. tobacco mkt. The original firms joining the I. T. Co. retained their identity and became branches of the Company. The following is a list of the company's branches today: W. D. & H. O. Wills; John Player & Sons; Ogden; W. A. & A. C. Churchman; Stephen Mitchell & Son; W. & F. Faulkner; Lambert & Butler; Edwards, Ringer & Biggs; Franklyn, Davey & Co.; W. T. Davies & Sons; and Wm. Clarke & Son.

The Company manufactures cigarettes, pipe tobacco, cigars and snuffs for sale in the United Kingdom and Elre. The export business was sold to the British-American Tobacco Company, Limited, in 1913.

It has tobacco leaf buying organisations in the U.S.A., Canada, Nyasaland, S. Rhodesia, Latakia (Syria), and Brit. North Borneo. In addition to the purely tobacco side of the business, the I. T. Co. owns and controls a number of subsidiary Companies engaged in the manu. of materials necessary to the tobacco trade — e.g. cigarette paper, cardboard for making cartons, printing and packing materials, etc. The headquarters of the company and its central administrative offices are at Bristol. It has factories in Bristol, Nottingham, Liverpool, London, Ipswich, Chester, Swindon, Glasgow, and Dublin. The company's authorised capital is £55,000,000, of which £50,120,985 is issued.

**Imperial War Museum**, opened at the Crystal Palace in 1920, removed to the Imperial Institute, S. Kensington in 1921, and to Lambeth Road, London, S.E. in 1936. It contains a large collection of naval and military trophies and relics, ordnance, small arms and ammunition, ships and other models, photographs, prints, books, pamphlets, and works of art.

**Impey, Sir Elijah (1732–1809)**, Chief-Justice of Bengal, India. In 1773 he was made the first chief-justice of the newly-established supreme court of Bengal in Calcutta, and was in close relations with Warren Hastings, the governor-general. In 1775 a native, Nuncomar or Nanda Kumar, who had succeeded Hastings as collector of Burdwan, brought a charge of peculation against the governor-general, supported by Francis's and Hastings' opponents on the Council. Nuncomar was arrested on a charge of forgery, tried by I., condemned, and hanged. In 1777 I. decided in favour of Hastings over the ratification of the governor's resignation. He was recalled in 1783 and impeached for his sentence on Nuncomar, but was acquitted. Macaulay's charges of a conspiracy with Hastings to contrive a judicial murder have been entirely disproved by Sir J. F. Stephen in *The Story of Nuncomar*, 1885.

**Imphal**, cap. of the native Assam State of Manipur (q.v.). It is really a collection of vills., whose combined pop. is 99,800. It was the theatre of the most critical battles in the Burmese campaigns. See BURMA, SECOND WORLD WAR, CAMPAIGNS IN.

**Implement**, in Scots law, the equivalent of performance of a contract or obligation in Eng. law.

**Implements and Machinery, Agricultural**, see AGRICULTURAL MACHINERY AND IMPLEMENTS; PLOUGHS AND PLOWING; TRACTORS.

**Imports and Exports**. Theoretically, the exports of a country exchange for imports at such values that the former will pay for the latter, and it is probably true that exports and imports constantly tend to an equality. But it was long uncertain whether it was more advantageous to have a surplus aggregate value of imports over exports, or vice versa. According to John Stuart Mill this uncertainty arose primarily from the traditional habit of looking rather to the profits of merchants than the price of commodities to the consumer — a habit which, in its turn, rested on the long-discarded belief that money alone was wealth. At the time of Mill it had become generally settled that the profit of foreign trade consisted in the difference between the price at which the goods were bought and carried, and the price at which they were sold. The difference between the gross money-value of the exports and imports of a country will give a rough idea of the amount of this profit. In England in 1863, 1864, and 1865, for example, the ratio of imports to exports was about 5 to 1. This fact would have excited alarm before Adam Smith's time. The assumption would have been that England was buying more than it sold. But, according to Mill, and to Professor Ashley, and others of the 'Free Trade' school of thought ('free imports' would more accurately express the doctrine), the only direct advantage accruing to a country from foreign trade consists in the imports; because, after paying with exports for the things it cannot itself produce, except at a greater expense of capital and labour than the cost of the exports, there is *ex hypothesi* a surplus of labour and capital for the production of other things. Mill expresses this categorically by pointing out that the opposite theories assume that what a country puts forth, and not what it obtains, constitutes its gain; and adversely criticises Adam Smith's doctrine that the benefit of foreign trade was that it afforded an outlet for surplus produce and enabled a portion of the capital of the exporting country to replace itself with a profit. His criticism may be summarised in his deduction: that a country produces an exportable article in excess of its own wants from no inherent necessity, but as the cheapest mode of supplying itself with other things. The inference drawn from this theory is that the only alternative to exporting in excess of wants would be the employment of the capital and labour thus set free in producing things previously imported, with a corresponding loss to consumers by reason of

## Imports

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## Imports

higher prices. And this strife between the capitalist, or producer, and the consumer is to be observed in all the fiscal arguments of recent times. Of course, the process of interchange of commodities is not necessarily as simple as the statement of its fundamental principle. There is the element of the cost of carriage, and it by no means follows that any particular imports can be allocated as the price of any particular exports, since any one given country trades with so many other countries. Moreover, exchange values are continually fluctuating within the limits of the ratios of the costs of production in each country although they tend

papers and not according to average prices. These invoices have to be produced by the importers and exporters. The prin. commodities (excluding munitions) exported from the U.S.A. to Great Britain to-day are grain and flour, raw cotton and cotton waste, fish (especially salmon and lobsters), tobacco, bacon, ham, lard, iron and steel, hides and skins, refined sugar, fresh fruit and vegetables, raisins, and leather manufactures.

Below is the import and export table of U.S.A. for the years 1925, 1929, 1937-1947, while the prin. articles exported by the Brit. Isles to the U.S.A. consisted of iron and steel, cotton, linen and woollen

Year	TOTAL TRADE (MERCHANDISE)		NET TRADE (MERCHANDISE)	
	Total Imports	Total Exports	Retained Imports	Exports of U. K. Goods
	£	£	£	£
1913	768,734,739	634,820,326	659,168,008	525,253,597
1939	919,508,933	532,279,966	857,984,000	470,755,329
1939	885,943,767	484,731,554	879,479,000	438,806,078
1940	1,099,868,577	439,273,162	1,126,139,000	413,084,205
1943	1,885,000,000	237,600,000	1,232,600,000	232,000,000
1944	1,322,609,205	258,052,000	1,306,941,000	265,046,000
1945	1,103,693,217	450,264,679	1,101,148,574	399,275,982
1946	1,297,682,580	962,031,683	1,250,750,660	911,686,238
1947	1,787,170,975	1,196,250,569	1,728,303,711	1,137,083,305

<sup>1</sup> Includes value of imported munitions.

<sup>2</sup> Excludes munitions—£658,446,000 (1943) and £1,062,164,000 in 1944.

<sup>3</sup> Uncorrected figures.

to an ultimate equality in accordance with Mill's law of the equation of international demand.

The most important items of Brit. imports are foodstuffs and raw materials, while about six-sevenths of the total exports are articles wholly or mainly manufactured. After the 1914-18 war, and as a consequence of it, there were extra imports in various countries due to payment of indemnities, and Germany, the prin. loser, was forced to export and thus the Allies to import; while repayment of inter-allied debts was a contributory factor to further theoretical importing and exporting. The value of goods imported is usually that at the port and time of entry, including cost, insurance, and freight (known familiarly as C.I.F.). Foods despatched for sale have their mkt.-value recorded in the returns at the time of leaving this country, the value being based upon a declaration of the exporter. This is checked in the customs dept. Export goods are valued at the port of shipment, while imported goods are valued at the country from which they were consigned, which is not always the place of shipment.

For the years 1913, 1938-40, and 1943-47 the values of imports and exports of merchandise relating to the United Kingdom were as shown above.

In the U.S.A. the values of imports and exports are fixed by invoices or shipping

place goods. The figures represent thousands of dollars :-

Year	General Imports	Total Exports & Re-exports
1925	3,824,128	4,864,580
1929	4,291,860	5,373,613
1937	2,047,485	2,282,874
1937	3,083,668	3,349,167
1939	1,960,428	3,094,440
1939	2,318,018	3,177,176
1940	2,625,379	4,021,116
1941	3,345,005	5,117,154
1942	2,744,862	8,079,517
1943	3,381,349	12,964,906
1944	3,919,270	14,258,702
1945	4,135,911	9,805,625
1946	4,008,676	9,739,482
1947	5,731,002	15,337,511

## GOLD AND SILVER

Year	Gold	
	Imports	Exports
1938	1,979,458	5,889
1939	3,574,650	508
1940	4,749,167	4,995
1941	982,442	64
1942	315,780	102
1943	101,793	32,866
1944	113,836	959,288
1945	93,718	199,908
1946	532,902	221,468
1947	2,079,588	213,241

Year	Silver Imports	Exports
1938	230,531	7,082
1939	85,307	14,630
1940	58,434	3,674
1941	47,053	5,673
1942	41,103	1,999
1943	27,903	30,689
1944	23,373	126,915
1945	27,278	90,937
1946	57,578	36,455
1947	68,140	30,649

The chief imports (excluding munitions) into the United Kingdom from Canada are dairy produce, particularly cheese and bacon, wheat, timber and wood pulp, motor-cars, and parts, and canned salmon; while Canada imports from Great Britain chiefly cotton manufs., iron and steel goods, clothing, spirits, coal, artificial silk yarn, linen and woollen goods.

The imports and exports excluding gold and excluding foreign produce of merchandise of Canada for the years 1935 to 1947 are the figures representing thousands of dollars:

	Imports	Exports
1935	559,010	721,977
1936	635,191	937,825
1937	808,896	997,367
1938	677,151	837,581
1939	751,055	921,926
1941	1,758,898	3,439,953
1945	1,585,775	3,218,330
1946	1,927,279	2,312,215
1947	2,573,941	2,771,902

See Annual Parliamentary Papers and Board of Trade Blue Books; A. Rowley, *Elements of Statistics*, 1901; R. Mayo Smith, *Statistics and Economics*, 1899; W. A. S. Hewins, *Trade in the Balance*, 1921; E. Nagoaka, *Economics of the Import and Export Trade*, 1930; F. Hooper and J. Graham, *Import and Export Trade*, 1930; A. Loveday, *Britain and World Trade*, 1931; J. Richardson, *British Economic Foreign Policy* 1936. See also CUSTOMS DUTIES; ECONOMICS; EXCISE; FREE TRADE; PROTECTION.

**Impotence**, which may be caused by malformation, by general weakness due to overwork, sexual excesses, old age, anxiety, certain diseases such as diabetes, or by an affection of the spinal cord, is a condition of the male generative organs which either temporarily or permanently prevents sexual intercourse. Quick remedies, if not useless, are irritant and harmful, but as a rule an active open-air life and liberal feeding, sexual rest, tonics, and cold baths will effect a cure. Psychiatric treatment will cure anxiety cases. See MARRIAGE.

**Impound:** (1) To place in a pound goods or cattle distrained for rent due or for damage done respectively. The things impounded are detained until *repleaded* or redeemed. A person at whose instance cattle are impounded is liable if the cattle be not properly tended while in the pound. (As to pound breach see *under* BREACH.)

(2) Where a judge during a civil trial is of opinion that the evidence discloses the

commission of a criminal offence and orders the documents in the case to be retained and sent to the director of public prosecutions, he is said to *impound* the documents.

**Impressionism**, in art, the somewhat vague and indiscriminate name given to a certain type of modern painting which is most strongly represented by the Fr. schools of Edouard Manet on the one hand and Claude Monet on the other. The former is purely realistic in its ideals; the latter, for which the name 'luminism,' or, as Camille Maclair suggests, 'chromatism,' would be more correct, aims at the study of atmospheric effects, the play of light, and similar chromatic values. The term *Impressionism* arose through the exhibition of Monet's 'Impressions,' a sunset which aroused particular ridicule at the Salon des Refuses (1863), and four years later a phrase in the catalogue of the exhibition of Manet's work established it still more firmly. Some, however, think that the term *impressionism* was first used in 1874 when the first 'impressionist' exhibition was held, in Paris, by which time the various tendencies in the works of the protagonists of *Impressionism* were, at the moment, fused into a doctrine common to most of the group. That doctrine may be said to have received its impulse from Courbet, who revealed a new breadth of handling and an interest in contemporary subjects. His exhibition in 1855 stirred up something little short of panic in the ranks of official Fr. art, since it forced them to realise that all the problems of art were not confined to the familiar struggle of Ingres *versus* Delacroix, or drawing *versus* colour, but that a third and more alarming doctrine had arisen: that of Realism. To younger artists like Pissarro, however, Courbet's return to nature and his rejection of conventional subjects opened up exciting new possibilities; and other painters who were deeply influenced by Courbet at this time were Manet, Fauché-Latour and Whistler, though the two latter were afterwards to deny their early master. It was, however, Whistler who introduced the word into Eng. art-vocabulary by his exhibition at the Grosvenor Galleries (1878). Since those days, in the teeth of opposition which is unparalleled in the list of art—except perhaps in the somewhat analogous case of Wagner's music-dramas—the movement has spread over the whole of Europe. The Fr. element is discussed below in some detail; it will be sufficient to mention the chief foreign representatives: (Ger.) Max Liebermann and Kuehl; (Belgian) Van Rysselberghe, Verheyden, and Heymans; (Swiss) Félix Vallotton; (Dutch) Matthys Maris; (It.) Pietro Frascacoma, Boldini, Segantini, and Michetti; (Sp.) Zuloaga, Francisco Pradilla y Batllá, and Rusiñol; (Dan.) Viggo Johansen and Kroyer; (Swedish) Anders Zorn; (Norwegian) Fritz Thaulow; (Russian) Ilya Repin. In Britain, apart from Turner and Constable, the movement is chiefly represented by the Glasgow school, John Lewis Brown, Guthrie, and Lavery; whilst Whistler, Sargent, Harrison, and Mary Cassatt are its representatives in America.

The sources from which I. was evolved are of the widest. It was in spirit akin to the Romantic Movement, as a revolt against the classical or academic schools, but technically it was no less a revolt against Romanticism also. In technique Watteau, Monticelli, and Delacroix are the chief forerunners of I. as far as the div. of tones is concerned, Lorrain, Veret, Ruysdael, and Poussin are its progenitors in the matter of landscape treatment and composition. The movement was also very strongly influenced by the exhibition of Jap. paintings, of Hokusai, Outamaro,

the Luxembourg), Renoir, Desbouts, Bazille, Legros, and Whistler (at that time a student). They also found sympathetic support in Gautier, Maupassant, the Goncourts, Zola, Mallarmé, and other men of letters, at different periods. It is therefore justifiable to regard Manet as the first great painter to lead the revolt of modern art against the symbolists and Romantics. In the realist impressionists as the chief of whom we may name Manet, Combet, Bastien-Lepage, and Degas, we find the artistic criterion of truth or character—*veride verum*—substituted for that of beauty



MONET'S "LA GARE ST LAZAR".

Druck

and Hiroshige at the International Exposition in 1867, both as regards its realism (e.g. Manet) and 'luminism' (e.g. Monet). But it might be claimed with no small degree of truth that I. was chiefly of Eng. origin, although it has made its headquarters in France. According to Wm. Ford Dewhurst, 90 per cent. of the theory of I. was clearly embodied in Ruskin's *Elements of Drawing*. And it was from Turner and Constable that Monet, Pissarro, and the others took their chief inspiration, especially in the matter of landscape treatment—the ideal style of subject for impressionist treatment, and the one in which the greatest results have been achieved.

In the first place I. centred on Manet, who was virtually the president of a little club that used to meet at the Café Guerbois, in the Quartier Batignolles, the circle included Monet, Pissarro, Cézanne, Degas, Jongkind, Berthé Morisot, Fantin Latour (whose life-sized painting of a group of the prin. members now hangs in

But this was only one of the ideals of the new art: there were two others, respectively the study of the mystery and beauty of light and the study of impression, i.e. the catching and reproduction of a momentary, vivid glimpse of a scene, as opposed to the systematic reproduction of the details which are unseen in such glimpses. The impressionists were the first to learn the art of presenting a *total ensemble* wherein details were either deleted or subordinated to the summarised effect of the whole. A blurred vision of things which encircle a central object on which the gaze is focused is correct optically. To a realist painter it is also correct artistically. And not only the focal principle, but brilliant sunlight, mist, or perspective are capable of blurring the definition of objects. Of the luminists, i.e. those whose main concern was the study of the mystery and beauty of light, as mentioned above, Monet was the leader; they may be considered as the direct descen-

dants of Delacroix. Of the other school, Renoir and Degas may be taken as most typical. With Monet and his group, the whole technique of I. is thoroughly investigated for the first time; they ostracised the conventional tonality of brown, and the use of all browns, blacks, and ochres; by the majority all palette mixtures were abandoned and only the pure colours of the spectrum, in addition to white, were accepted.

Side by side with the juxtaposition of touches of pure colour are the principles of: (1) The simplification of light and shade in the presentation of mass rather than outline; (2) the investigation of shadow, which is not absence of light, but light of diminished intensity; and (3) the separation of local colour and reaction. By the employment of these means the impressionists succeed in a marvellous degree in the portrayal of motion—the sway of shadow, the passage of light, the heaving movement of water, the sensation of wind. However much of this may be credited to such painters as Cécile and Fromentin, the combined value of light and of movement in relation to one another reaches its supreme expression on the canvases of A. J. Renoir, Degas, Cézanne, Pissarro, and Sisley. With it we must also associate the visionaries, or spiritualists—Gustave Moreau for his symbolism, Puvis de Chavannes for his fine decorative treatment, and Carrière for psychic insight. The last named, like Whistler, Harrison, and Pointillin, belongs to a distinct school, whose technique differed from that of Monet in so far as, instead of employing the principle of juxtaposition of pure colour, they applied flat tints in a broad style, using not only the pure, radiant prismatic colours, but also palette mixtures. It remains only to refer to the method known as 'Pointillism,' whereby the colour is transferred to the canvas in spots instead of in mass, as in the case of the chromaticists already discussed. The inception of this method, which is associated rather with the Neo I. of which Gauguin, Denis, and Van Rysselberghe are the leaders, is attributed to M. Henry, who conceived the æsthetic expression of the newly discovered scientific theories on colour-waves and spectral analysis in the works of Helmholtz and Chevreul about 1880. The idea concerned itself especially with complementary colours and the reaction of tones. Its chief practical application is ascribed to Georges Seurat. Van Gogh also used this technique, and Van Rysselberghe employs it constantly. But the method is obviously alien to the spirit of art: it is charnelous, devoid of character, too purely theoretical and removed from inspiration.

The first success of I. was the exhibition of Manet in 1884, consisting of some forty pictures—less than ten years after the first public sale, when such frantic hostility was shown that it was necessary to organise police precautions! In 1897 the collection of Callebotte, a wealthy amateur who had befriended I. from the outset and had even gained some small notoriety for his own work, was accepted

with reluctance and after considerable hesitation by the Ministry of Fine Arts and exhibited in the Luxembourg. The same year at the Vever sale, and two years later at the Choquet sale, the once despised canvases changed hands for enormous sums. Manet's portrait of Monet in his studio, for instance, which realised about 150 francs in 1884, went for 10,000 francs, while at the Pellerin, Paris, in 1910, even greater prices were offered. See C. Maclair, *French Impressionists*, 1904; W. Dewhurst, *Impressionist Painting*, 1904, with bibliography; C. Marriot, *Modern Movements in Painting*, 1920; F. Rutter, *Evolution in Modern Art*, 1926; W. Uhde, *The Impressionists*, 1937; J. Rewald, *The History of Impressionism*, 1917.

*Impressionism in Music.*—Term applied more or less loosely, to composers (especially Fr.) contemporary with the school of impressionist painters. Debussy, although he disapproved, was designated as the leader of musical I. One of the chief aims of I. is to interpret artistically a momentary glimpse of things rather than their permanent state.

*Impressment*, act of forcibly taking persons or goods for the public service; but generally restricted to the work of press-gangs in compelling persons to serve as soldiers or sailors in time of war. I. of sailors differed from that of soldiers. It was regarded as a prerogative right of the crown, given by the common law and recognised by statute. This is explained by constitutional historians by the fact that the feudal tenure of land made provision for land but not for sea service. I. of soldiers was declared illegal by the Long Parliament of 1641, but was occasionally resorted to subsequently, e.g. during the Amer. War of Independence, under special parl. authority. I. of soldiers is to be distinguished from conscription, which, although also a statement, applies to all able-bodied persons alike. It may be observed here that during the Boer war of 1900 the I. of goods was commonly known by the term 'commandeering.'

*Imprisonment*, see under PRISONS.

*Impropriation*, the grant of a benefice or parsonage to a layman or lay corporation as opposed to 'appropriation,' or the 'annexing of a benefice to the proper and perpetual use of some religious body politic.' The terms have, however, been used synonymously both in text books and in statutes. Both terms imply the endowment of vicarages consequent on the rise of par. churches by the consent of the bishop, who alone had the care of souls in his diocese, together with the title to all eccles. revenues. But as the practices of appropriation and I. originally prevailed, there was an essential difference; for a layman, not having care of souls, applied the temporalities of the benefice to his own use. Before the Reformation appropriation and I. prevailed extensively, the monasteries furnishing the most numerous examples of the religious corporations that obtained grants of benefices. After the suppression of monasteries the crown was vested with all such rights as related

to the grant of benefices; but the crown freely transferred its rights to laymen. In practice the spiritual duties of rectories, the tithes or whole property of which have descended to laymen, are always discharged by a vicar (Lat. *vicarius*, delegated), who receives a certain portion of the emoluments of the living (see *GLEBE LAND*). See Phillimore's *Ecclesiastical Law*; Blackstone's *Comments*.

**Improvisatori**, or **Improvisation**, the art of composing verses, whether accompanied by music or not, on the spot without preparation, and on subjects suddenly proposed. It is distinctly It. in origin, though the Provencal troubadours, in spite of the elaborate versification of their poems, are credited with the power. Silvio Antonio (1510-1603) was said to have been made a cardinal because of his skill in composing verses on any subject; Peretti (1681-1717), to the accompaniment of a guitar, astonished the whole of Italy by his skill. He was crowned with laurel by Pope Benedict XIII. Corilla Olimpica, Madame de Staël's Corinna, was also crowned. Outside Italy, the Swedish poet, K. M. Bellman (1740-95), the Fr. Joseph Méry (1798-1865), and the Eng. humorist, Theodore Hook (1788-1811) may be mentioned. The art is practised to-day chiefly in music-hall and cabaret entertainments. Many of the great musicians and instrumentalists have exhibited their power of improvisation. See A. Vitagliano, *Storia della poesia estemporanea nelle lettere italiane*, 1905; E. Ferand, *Die Improvisation in der Musik*, 1938.

**Imputation**, attribution to another of some quality or character, especially of a charge of guilt. The term is used technically in theology of the attribution to all faithful believers in Christ of His righteousness, by vicarious substitution of man's sin to Him, and of Adam's sin and its consequences to all mankind as Adam's descendants. The term thus plays a part in the doctrines of original sin, of predestination, and especially of the orthodox view of the Atonement (*q.v.*).

**Imros**, see **IMBROS**.

**Ina**, or **Ine**, king of the W. Saxons, or Wessex, succeeded Ceadwalla in 688. He forced compensation for the death of Ceadwalla's brother from Kent in 691, conquered Geraint of W. Wales in 710, fought in Wiltshire against the Mercians, and in 725 crushed a revolt of the S. Saxons. He drew up a still extant code of laws for Wessex, and having abdicated in 726, and retired to Rome where he died, the date not being known. He is said to have built Glastonbury.

**Inaccessible Islands**, see **TRI-TAN DA CUNHA**.

**Inagua**, Great and Little, two is. in the archipelago of the Bahamas in the Brit. W. Indies, situated at the southern end of the group. Great Inagua has an area of 530 sq. m. and contains salt ponds. Pop. under 2000.

**Inari, Lake**, see **ENARÉ**.

**In Articulo Mortis** (literally, at the point of death). In the Rom. Catholic Church only priests who have received jurisdiction

from the pope, from bishops for their diocese, or higher superiors of religious orders for their subjects may or can absolve penitents from their sins. But a simple priest, even if degraded or apostate, can absolve any penitent in *articulo vel periculo mortis* in all cases, including those of grievous sins which are ordinarily reserved for absolution by some eccles. superior, like the ordinary of a diocese. As to the admissibility in evidence of the declaration of a deceased person relative to the cause of his death, see **under DECLARATIONS OF DECEASED PERSONS**.

**Inca**, in. in the Balearic Islands in the Mediterranean, 17 m. E.N.E. of Palma, Majorca, belonging to Spain. Oil, wine, and almonds are its chief products, and it gives its name to one of the five judicial dists. into which the is. are divided for the purpose of administration. Pop. 9400.

**Incandescence**, the term applied to the state of bodies when they give out light through being highly heated and yet are not undergoing chemical change. It is usually associated with solids, although the oxy-hydrogen flame is an example of its appearance in gases. See **GAS** and **ELECTRIC LAMPS**.

**Incandescent Light** is produced when a 'mantle', consisting of a conical hollow gauze of certain metallic oxides, is placed in a hot but non-luminous flame produced by a burner of the Hussen type. Welsbach was the first to substitute certain metallic oxides for carbon as the incandescent body. The 'mantle' is made by impregnating a cotton or ramie 'stocking' with a solution of various salts, the usual mixture being 99 parts thorium nitrate and 1 part cerium nitrate. On ignition a skeleton of the oxides of the metals remains, giving out a brilliant light by virtue of its incandescence.

**Incandescent Lighting**, see **under ELECTRIC LAMPS** and **ELECTRIC LIGHTING**.

**Incantation** (Lat. *incantatio*, from *incantare*, to enchant; from *in* + *cantare*, to sing repeatedly), the use of a set form of words, spoken or sung, to produce a magical and preternatural effect. The use of the word *incantare* in Lat. is very early, for it appears in a passage quoted by Pliny from the Twelve Tables, and from it is derived, through the Fr., our word 'enchant.' It is almost certain that the use of magic spells must be traced to an Akkadian source, for many ant. examples of Babylonian and Assyrian formulae have been discovered. An interesting sidelight on the important position which the Magi or magicians, generally Chaldeans, held at an E. court, is given in the Book of Daniel. Ultimately we are told that Daniel himself became their head. An almost unbounded power was attributed in ant. times to the power of magic rites, to which the gods and the powers of nature were believed to be subject. Many of these could be used by any individual, but others were the property of the priest or magician, whose influence was due to his supposed power for good or evil. In Christian times, the use of is. has by no means ceased, even in the

countries commonly named Christian. It can easily be traced through the centuries. In the Middle Ages the sacred ceremonies and rites of the Church were often conceived of by the ignorant as charms. An allusion to the use of the first fourteen verses of St. John's Gospel as a kind of incantation is given in Chaucer's *Prologue* in the lines on the Friar beginning 'So pleasant was his In *Principio*.' Many of the old nursery rhymes now dying out were formerly used as incantations against rain and the powers of nature. See F. Lenormant, *Chaldean Magic* (trans., 1878); L. F. Maury, *La Magie et l'Astrologie* (1th ed.), 1877; Sir J. G. Frazer, *The Golden Bough*, 1900.

**Incarnation** (from Lat. *incarnari*, to be made flesh; from *in* + *caro*, flesh), in Christian theology, the act by which the Second Person of the Blessed Trinity assumed human form and human nature. In many other religions, and especially in those of India, there are accounts of the taking of human flesh by the gods in order to secure a fuller revelation to the world; but these differ essentially from the orthodox Christian belief in the I. of Jesus Christ, which lays stress on the fact that the Logos, eternal Divine, then became also essentially human, so that Christ was 'perfect God and perfect Man; one not by conversion of the Godhead into flesh, but by taking of the manhood into God.' See R. W. L. B. *Doctrine of the Incarnation*, 1882; J. Orr, *Christian View of God and the World*, 1893; J. Gore, *Bampton Lectures*, 1891; J. Eck, *Incarnation*, 1902; C. Lattey, *The Incarnation*, 1926; A. E. Rawlinson, *Essays on the Trinity and the Incarnation*, 1928.

**Incas of Peru**, see **PERU**.

**Ince-in-Makerfield** (n. and urb. dist., Lancashire, England, in parli. div. of Ince). It stands on the Leeds and Liverpool Canal, 1 m. S.E. of Wigan. It has collieries, iron and wagon works, cotton mills, etc. Pop. 19,700.

**Incensiarism**, see **ATON**.

**Incense** (Lat. *incensum*, from *incendere*, to burn), perfume arising from the fumigation of resins, gums, balsams, etc., used in public worship from a very early date, and prevailing in many auct. religions; but its use was not generally adopted in the Christian church till the sixth century. In the time of Gregory the Great. There is no regular formula for the preparation, but the ingredients, after having been well mingled, are placed in the censer or thurible and sprinkled over the hot charcoal contained therein, when they at once become volatilised, and diffuse their odour through the building. In the Catholic Church, I. is chiefly used in the eucharistic sacrifice and Benediction (*q.v.*). I. has symbolic significance of zeal, virtue, and the ascent of prayer to God. In the last half-century its use was abolished in the Reformed churches, but has been restored to a certain extent in the Anglican communion.

**Incest**, sexual intercourse between persons prohibited from marrying by reason of kinship or affinity. Formerly I. was not a crime by Eng. law, except in so far

as the spiritual courts took cognisance of the offence. But by the Incest Act, 1908, intercourse by a male with his granddaughter, daughter, sister, or mother, is a misdemeanour punishable with penal servitude. Consent of the female is no defence, and a consenting female is liable to the same punishment. 'Brother' and 'sister' as used in the Act include half brother and half-sister. No prosecution may take place without the sanction of the Attorney-General. The Act does not extend to Scotland, because I. was already a crime in Scots law. Although marriage with a deceased wife's sister is now lawful (see **DECEASED WIFE'S SISTER**), intercourse with a wife's sister will enable a wife to obtain a divorce on the ground of incestuous adultery. In primitive tribes the prohibition of consanguineous marriages is a slow development. Sir James Frazer, in dealing with totemism in relation to exogamy, is too prone to dogmatise on the origin of the aversion to incestuous unions. Whether that aversion sprang from religious or merely ethical sentiments, or from a perception of disastrous effects on racial development, is a question the answer to which depends mainly on conjecture. See L. H. Morgan, *Ancient Society*, 1877; Sir J. G. Frazer, *Totemism*, 1887; and H. Spencer on 'Punaluan Groups,' in the *Principles of Sociology*, 1910.

**Inch**, from the Gaelic word *innis*, meaning a small is., or a land by a riv., found in the geographical names of Scotland and Ireland. It is also used locally of a meadow by a riv., as the 'Inches of Perth,' and sometimes in the sense of rising ground in the midst of a plain.

**Inchbald, Elizabeth** (née Simpson) (1753-1821), Eng. actress, married at the age of nineteen Joseph Inchbald, an actor. She was now able to fulfil her desire and go on the stage. She made her debut in the province as Cordelia to her husband's Lear. Until his death in 1779, they toured the country; but then she secured an engagement in London, where she remained until her retirement in 1789. She never achieved any great fame as an actress. Mrs. Inchbald began writing plays at an early age, but the first piece that was produced was *The Mogul Tale*, at the Haymarket in 1784. In all, she wrote or adapted some twenty plays, but none met with any great success. Better known than these is her romance *A Simple Tale* (1791), which attracted much attention, and is her best work. In 1806 she began to edit *The British Theatre*, in twenty-five vols. and this is a collection of considerable value to students of the drama. There is a biography of I. by James Boudon (1833).

**Inchcape Rock**, see **BELL ROCK**.

**Inchcolm**, or **Island of Columba**, in the frith of Forth, forming part of the par. of Aberdour, Fife-shire, Scotland. It contains a fine Augustinian monastery founded in 1123 by Alexander I.; the church, chapter house, refectory, cloisters, and a square tower being still preserved. There is also an auct. stoneroofed oratory, supposed to have been a hermit's cell. From

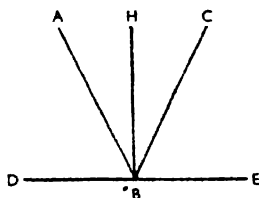
the 15th the earls of Murray take their title of Lord St Colme (1611)

**Inchgarvie**, rocky islet in the firth of Forth off the coast of Fife-shire, Scotland. It possessed at one time a fine old castle that was used as a state prison, but the ruins were cleared in order to build one of the piers of the Forth Bridge. It is included in the royal burgh of Inverkeithing.

**Inchkeith**, is in the firth of Forth, forming part of the par of Kinghorn, in Fife-shire, Scotland. It is a barren rock and has now become gov. property and a fine lighthouse has been built which can be seen for a distance of 21 m. Henry VIII fortified it after the battle of Pinkie, but in 1519 it was recaptured by the Scottish and Fr. troops. In 1841 forts were built on the different headlands and linked up by military roads.

**Inchmahome** (the Isle of Rest) is in the Lake of Menteith, in Perthshire, Scotland. It contains the ruins of an early Eng. Augustinian priory, built in 1238 by Walter Comyn, and possesses a fine W. doorway. Queen Mar. is said to have spent some months on the is. when a child before going to France (1418).

**Incidence**, Angle of, term used for the angle made by the direction of a disturbance impinging on the surface of a medium with the normal to the surface.



ABH is the angle of incidence of reflection. CBH is the angle of reflection.

**Inclination of one line to another**, which meets it, but is not in the same straight line, is Euclid's definition of an angle.

**Inclination**, see DIP.

**Inclined Plane**, rigid plane inclined at an angle to the horizon. It is a mechanical instrument used to facilitate the lifting of heavy bodies. In the case of an inclined plane a power of 1 lb. will support a weight of 6 lb. thus giving a mechanical advantage of 6.

**Inclosures**, see COMMONS AND ENCLOSURES.

In *Cena Domini*, papal bull the commencing words of which were *In Cena Domini*, formerly issued every year in Holy Week. Its object was to publish the papal censures of all heresies, schisms, and infractions of papal privileges, and various temporal crimes. It was first pub. in 1361 and was only discontinued in 1770, when the Pope yielded to the opposition of the European kings who objected to the bull as a limitation of their sovereign authority.

**Income Tax**, tax on income from whatsoever source derived graduated according to the amount of income and with a differentiation in certain cases between earned and unearned income. The I. T. as a general tax on property and employments was first imposed by Pitt in 1799 as a war tax. It was a temporary imposition on income from land, personal property, trades, professions, offices, pensions, stipends, and employments, and also upon incomes arising out of Great Britain and was graduated on all incomes ranging from £60 to £200 a year, with a tax of 10 per cent on incomes above £200. When the war with France broke out again in 1803, Addington imposed the tax at the rate of 5 per cent on incomes of £150 a year and over. But the Income Tax Act of 1803 did not require a general return of income from all sources as had the Act of 1799 but only particular returns of income from particular sources. In 1806 Pitt, having returned to power, continued the tax, and added one fourth to all the rates. The coalition ministry after the death of Pitt augmented the rate to 10 per cent and from that year the tax was continued and increased from time to time until its abrogation in 1815. Even in these earlier Acts there was some principle of differentiation e.g. in the Act of 1806 the exemption of incomes not over £10 was only allowed where the income was derived from labour viz. from professions, trades, and offices. The principle of exemption by way of allowance for children was adopted in the earliest Act, but discontinued in 1806. In the first year of its imposition the I. T. produced over £1,000,000, and in 1815 £11,320,000. Regarded at first and even now in theory as essentially a war tax, it was not revived again until 1841 for merely fiscal purposes. In 1842 imposed it at the rate of 7d. in the pound or about 3 per cent, adopting in his Act the groundwork of the Act of 1801. But the limit of exemption rose to £10 and was made more restrictive of the mode of derivation. Farmers were taxed on a lower estimate of their profits and gas, water, and railway companies were brought in. Although in 1842 it was imposed for three years only, it has been continued ever since and has now definitely lost all semblance of a temporary war tax. Gladstone in 1853 extended its operation to Ireland and so made it universal in the kingdom. The principal change has been the demerit of one of granting relief in respect of 'earned income' up to £2000, and imposing a super tax on incomes over £1000.

The provisions relating to the rate, collection and assessment of the I. T. immediately prior to the changes introduced by the Finance Act of 1909 will be conducive to a clearer appreciation of those changes, and may be summarised. For the most part the provisions as to administration and incidence have undergone no alteration. It was divided into five schedules according to the different sources of income. Schedule A formed the charge on the owners of land and houses. B) on the benefit arising out of the



use of occupation of land, which benefit was measured by a proportion of the rent or ann. value; C related to income from any public revenue, imperial, colonial, or foreign; D, income from professions, trades, and other occupations, together with all such incomes as were not included in any of the other schedules; and E was a charge on persons employed by the state or engaged in any other office of profit in a public corporation or company. Incomes not exceeding £160 were totally exempt; real property exempt included public parks and recreation grounds, prisons, public offices, or other crown property, and canals, mines, quarries, etc., from which no income or benefit is derived beyond the general profits of the concern to which they belong. Other exemptions were incomes from property held on trust for charitable purposes in so far as applied to such purposes, the stock dividends or other income of friendly societies (*q.v.*), and of industrial and provident societies (*see under FRIENDLY SOCIETIES*). Incomes of individuals not exceeding £100 were allowed an abatement of £160; not exceeding £500, of £150; not exceeding £600, of £120; and not exceeding £700, of £70. An allowance for premiums for life assurance, not exceeding one-sixth of the income, was also allowed. The relief to 'earned' incomes was a reduction of 3d. in the pound upon the rate paid on unearned incomes. The general rate was 1s. in the pound, and 6d. in the case of earned incomes not exceeding £2000. The tax was granted for a year only, but annually renewed. The assessment and collection of the tax was entrusted for the most part to local commissioners, known as general or district commissioners, appointed by the Land Tax Commissioners out of their own body, and not in any way subject to the control of the gov. These commissioners received no remuneration, although exempted from parochial offices and jury service. Their duties consist in signing and allowing I. T. assessments, and hearing appeals. They also appoint local officers for I. T. purposes. There are also special salaried commissioners appointed by the crown to make assessments under Schedule C, and, where the tax-payer elects, under Schedule D; also to assess railway companies and dividends out of foreign and colonial stocks, funds, or other revenues. Special commissioners may hear appeals from their own or the assessments of local commissioners. The assessments of the salaries under Schedule E are made by the commissioners for public offices. The duty of a collector is to obtain payment of the I. T. from the persons on whom it is imposed, and for this purpose he is supplied with warrants to enforce payment. As indicated above, most of these provisions are re-enacted annually, and to ensure collections in due time these provisions and all enactments relating to I. T., not specifically repealed, have full force as soon as the tax is granted in any Finance Act (*see Section 18 (2) of the Finance Act, 1907*). A Select Committee was appointed in 1906 to inquire

into the question of graduating the I. T., and recommended a partial graduation by an extension of the existing system of abatements, even up to incomes of £1000 or more. They also recommended graduation by a super-tax, and a differentiation between earned and unearned incomes, to be limited to incomes not exceeding £3000 a year. Some of these recommendations found expression in the Finance Act, 1909-10.

The I. T. year is from April 6 to the following April 5. The standard rates of I. T. between 1812-43 to 1854-55 was 7d., in 1855-56, 1s. 2d.; 1856-58, 1s. 4d.; it was then below 1s. until 1900-01, when it rose to 1s.; in 1915-16 it was 3s.; 1916-17 and 1917-18 it rose to 5s., and thereafter was as follows: 1918-19 to 1921-22, 6s.; and ranged between 4s. in 1922-23 to 7s. in 1939-40; 8s. 6d. in 1940-41, 10s. in 1941-42 to 1944-45, and was reduced to 9s. in 1945-46.

The Sur-Tax replaced the super-tax, which was levied up to and including the super-tax year 1928-29. The Sur-Tax is in effect a deferred instalment of I. T. payable on Jan. 1 after the end of the I. T. year. Sur-Tax is at the following rates: — in respect of the first £2000 nil; — chargeable on every £ of income.

£	£	
2,001 to 2,500	.	2s. 0d.
2,501 to 3,000	.	2s. 6d.
3,001 to 4,000	.	3s. 6d.
4,001 to 5,000	.	4s. 6d.
5,001 to 6,000	.	5s. 6d.
6,001 to 8,000	.	6s. 6d.
8,001 to 10,000	.	7s. 6d.
10,001 to 15,000	.	8s. 6d.
15,001 to 20,000	.	9s. 6d.
20,001 to 25,000	.	10s. 6d.

In the Finance Act, 1910, power was given to reduce the basic figure for Sur-Tax purposes to £1500; but no action has been taken under the Act, and £2000 remains the basic figure.

The Finance Act of 1920 introduced a new practice in respect of the method of granting relief in I. T. in favour of earned income as compared with investment income. Abatement was also granted in respect of the number of members in the tax payer's family.

The terms 'assessable' and 'taxable' as applied to incomes were employed for the first time in relation to I. T. 'Assessable income,' in the case of earned income, means the amount of such income as computed for I. T. purposes, after deducting the amount of the 'earned' income allowance, and in the case of other income, the actual amount of such income as computed for I. T. purposes. 'Taxable income' means that part of the 'assessable income' upon which I. T. is actually charged, i.e. the 'assessable income' less the various deductions by way of relief.

The differentiation in favour of 'earned' income is made by deducting one-sixth (1917 Finance Act) of the 'earned' income in order to arrive at the assessable income. The deduction is given irrespective of the amount of the total income, but must not exceed £250 for any one

individual. An allowance is also made of one-eighth of the unearned income of persons of the age of 65 years and upwards whose total income does not exceed £500. This allowance is granted, in the case of a married couple, whether either the husband or his wife, living with him, has reached the age of 65 at the commencement of the year of assessment, but the joint total income must in such a case fall within the prescribed limits.

**Deductions from assessable income in order to arrive at taxable income.**—Exemption from tax may be claimed where the total assessable income does not exceed £120. Where the taxpayer is not totally exempt, the following are the deductions that may be claimed from the total assessable income in order to arrive at the 'taxable income' and these deductions may be claimed irrespective of the amount of the taxpayer's total income: *Personal Allowance* may be claimed of £110, or, in the case of an individual whose wife is living with him, £180; *Life's Earned Income*: when a taxpayer's total income includes earned income of his wife, the personal allowance of £180 is increased by a sum equal to seven-eighths of the amount of such earned income, subject to a maximum additional allowance of £110; *Deduction for Children*: a deduction of £60 may be claimed in respect of each child, step-child, or adopted child under the age of 16 or who, if over 16, is receiving full-time instruction at any univ. college, school, or other educational estab. A claim may also be made in respect of children employed in a trade provided the pay (excluding premiums returned) is not over £13 a year. These deductions are not allowable in respect of children enjoying in their own right incomes exceeding £60 a year. There are also other reliefs in the shape of deductions in respect of dependent relatives and of widowed mothers taking charge of children, and in respect of dependent relatives denied unemployment allowance. Allowances may be claimed also on the amount of premiums paid for *Life Insurance* of the taxpayer or his wife, or in respect of contracts for *Deferred Annuities*: this relief or allowance is deducted from the amount of tax and calculated at the following rates: one-half the standard rate in the pound on the amount of the premium paid on policies taken out before the above date, a deduction of tax at one-half the standard rate in the pound is allowed on the premiums paid by a claimant whose income does not exceed £1000, at 5s. 3d. in the pound where his income exceeds £1000 and does not exceed £2000, and at 7s. in the pound where his income exceeds £2000.

All contributions to national insurance, whether paid by employer or employees, are allowed as a deduction from income and not as for insurance premiums.

**Post-War Credits.**—The large increase in the rate of I. T. during the Second World War was to some extent mitigated by the proposal (see White Paper entitled Financial Statement (1941-42) S.O. 73) to treat the additional tax payable by each individual taxpayer in respect of the re-

ductions in earned income allowance and the personal allowances a credit to be made available to him after the war. The total cost of post-war credits at the end of the financial year 1945-48 was £800,000,000. Credits were repaid in 1946 to taxpayers over 65 years of age.

With respect to Dominion I. T. relief is granted to a person who has paid or is liable to pay United Kingdom I. T. on any part of his income and who proves that he has paid Dominion I. T. for the same year in respect of the same part of his income.

Perhaps the greatest change which has occurred since the First World War in relation to I. T. is the abolition of the three years' average in the case of assessments of profits of businesses, professions, etc., under Schedule D and the substitution of an Assessment on the profits of the preceding year (Finance Act, 1926). By the Finance Act, 1922, certain revocable trusts are assumed by the crown as formed for the purpose of avoiding tax, and provision is made that all income arising in these cases is to be regarded for finance purposes as income of the person who has the power to obtain its enjoyment or the maker of the trust, etc. The Finance Act, 1936, also made provision for the prevention of the avoidance of I. T. by trusts and other devices. There are many exceptions to the law made in favour of charities, the general effect of which is that money used or earned directly in connection with charities is free of tax. In respect of the general principles of taxation in so far as they relate to I. T. the decisions of the Courts have established that (1) tax is in respect of income, (2) accretions to cap. are not to be taxed, (3) deductions from income in respect of losses of cap. are not admitted, (4) profits from changing the character of property otherwise than in pursuance of a systematic scheme of profit getting are not chargeable in respect of income, (5) gifts and voluntary allowances or payments are not taxable as income of the recipient, (6) the law leans in favour of the subject, but hardship is no answer to a claim for tax.

It is interesting to compare the amounts paid in I. T. before the First World War with those paid after that war, and equally instructive to compare these figures with those for the years of the Second World War and after. In 1911-12 the total receipts in the U.K. were £11,315,655, while in 1929-30 the total receipts were £293,816,000 (inclusive of £56,390,000 super tax and surtax). In 1937-38 the total net receipts were £297,861,548; in 1938-39, £336,052,321; in 1939-40, £391,592,899; in 1940-41, £530,765,156; in 1941-42, £775,165,319; in 1942-43, £1,007,312,163; in 1943-44, £1,182,827,889; in 1944-45, £1,309,616,833; in 1945-46, £1,361,346,000; in 1946-47, £1,156,233,000; in 1947-48, £1,189,728,000; in 1948-49, (estimated), £1,490,000,000. These figures should not be taken as indicating a great increase in national prosperity, but as indicative of the burden laid upon the subject in the form of taxation.

With regard to the other countries of Europe, it may safely be asserted that I. T. forms a ready but in popular means of raising revenue and in general the same broad principles are laid down as in England, viz. graduated systems with an initial rebate and allowances for families.

The endeavour to impose an I. T. in the U.S.A. in the past met with fluctuating success. As in England, it began as a war tax when it was imposed by the Federal Gov., which during the Civil War levied a tax of 3 per cent on all incomes over \$800. It was not abrogated till 1872 but when revived in 1899 the courts declared it to be unconstitutional with the result that the constitution had to be amended to vest in Congress the necessary authority to impose the tax.

On Feb. 25, 1913, the XVI Amendment of the U.S.A. constitution was declared in force. It states that Congress should have power to levy and collect taxes on incomes from whatever source derived with out apportionment among the sev. states and without regard to any census or enumeration. This amendment was ratified by all states except Connecticut, Florida, Pennsylvania, Rhode Island, Utah and Virginia. See *The Annual Reports of the Commissioners of Inland Revenue*, S. Dowell *Income Tax Laws, 1871 and History of Taxation in England, 1884*, R. L. H. *Taxation in American States and Colonies, 1888*, Sir R. Pilgrimage, *Dictionary of Political Economy, 1894*, 1905, A. C. Pigou *Applied Economics, 1923*, E. D. Fisher *Introduction to Income Tax, 1931*, Wilson and Heaton *on the Income Tax, 1st ed. 1931*, H. and A. Edwards, *Supplement to Murray and Carter's Guide to Income Tax Practice, 1945*, R. A. Butler, *Income Tax for 1946 year, 1945 & 46*.

**Incommensurable**, see COMMENSURABLE.

**Incorporated Law Society**, society of solicitors estab. in 1820 to exercise a general control over the interests of solicitors. Any solicitor practising in Great Britain, or who has ceased to practice, is eligible for membership. The society examines students for all the solicitors' examinations, and makes arrangements for lectures. It is authorised by statute to inquire into all cases of alleged misconduct on the part of solicitors, and to report the result of its inquiry to the High Court; the High Court may in its discretion either strike the name of the offending solicitor off the rolls or suspend him from practice. In cases of suspected criminal offences by solicitors the society may report to the Public Prosecutor. The society has a building in Chancery Lane, London, and a splendid library.

**Incorporeal Chattels and Hereditaments**. Incorporeal chattels are the rights or interests incident to personal property, e.g. copyrights, patent rights, annuities, debts, cash at a bank, gov. stocks, debentures of companies. Such property is said to be incorporeal because it has only a notional existence as opposed to corporeal chattels, or those having a physical existence. Incorporeal hereditaments are rights over or in connection with the enjoyment of land, as opposed to the right on

immediate or future possession of the land itself, e.g. rights of way, advowsons (right of presentation to a vacant living), rents, commonable rights (see COMMON, RIGHTS). Formerly the term incorporeal hereditament included future estates or interests in land or the right to the future possession by way of reversion or remainder (see LEASE, GRANT) such incorporeal hereditaments were said to 'lie in grant' (by deed) while corporeal lay in livery i.e. transfer of possession was necessary, essentially to pass them to another. As both incorporeal chattels and hereditaments now pass by deed, the distinction between them has no practical importance.

**Increment Value Duty** was introduced by Mr Lloyd George as Chancellor of the Exchequer in his famous Budget of 1909. The duty imposed by the Finance Act of that year was one pound for every five pounds of 'increment value' accruing to land on: (1) Sale or lease (for a period exceeding 14 years) (2) Succession (on death of the owner) (3) Valuation to be made every fifteenth year in respect of land held by permanent corporations.

The Act provided that increment value was the amount by which the site value exceeded the original site value.

The commissioners of Inland Revenue were made responsible for valuing all land in the U.K., having regard to (1) site value and (2) total value. 'Site value' was defined as the value of the bare land without buildings, etc. (these latter being included in the total value) and 'original site value' as the value of such land on April 6, 1909. Agric. land was exempt from the duty so long as its value did not exceed the market value for agric. purposes.

The duty was a failure. Valuation was a long, costly, and inquisitive process and the actual return from the tax proved disappointing. The Finance Act of 1920 abolished the duty.

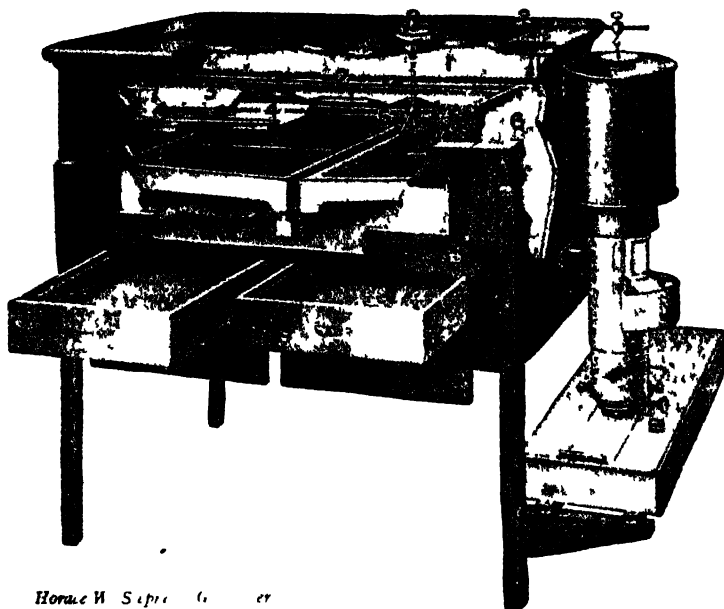
**Incubation and Incubators** (from Lat. *in ubere*, to brood; *incumbere*, to lie on or within). I. is strictly the action of a bird in sitting on her eggs to hatch them but the term is also used of the development of the germs of disease within the body and especially in connection with the artificial machines (incubators) employed in hatching eggs artificially, or for similar purposes in bacteriological laboratories. In nature I. is often the task of the female only, but sometimes the male takes his share as in the case of ostriches and most jassering and running birds. In other cases, again, the eggs are laid among rotting vegetation, the high temp. thus afforded making brooding unnecessary. The period of incubation varies considerably in length from three weeks with ravens and common fowls, to six or seven with swans and ostriches, and two weeks or less with swallows. The habit of brooding over their young is not infrequently found in other creatures as well as in birds, for example, in earwigs, centipedes (*Scolopendra*), and pythons.

Artificial incubation was known from the earliest times, and practised among

the Chinese and Egyptians by means of huge egg-ovens, types of which are in use by primitive people to the present day. Commercial manufacture of incubators began about 1900 and the only machine then made was a hot water type. This incubator consisted of a double walled cabinet with insulation or dead air space between the walls. The interior of the incubator was heated with a hot water tank

whole with hot water pipes running from an anthracite boiler. Each compartment could be operated independently but the chief disadvantage to this type of machine was the amount of space necessary for easy operation. This, together with the amount of labour involved, gradually led to them becoming obsolete.

A few years after the invention of the hot water incubator a new type was



HORACE W. S. P. 1916

#### EGG INCUBATOR

1, Substantial depth of packing preventing loss of heat 2, Pipes which circulate fresh warm air into interior of incubator 3, Heater for and diffuser 4, Air inlet and discharge over the egg chamber 5, Insulated regulator for maintaining even temperature 6, Thick packing, which makes up the back and front of the incubator 7, Draw is into which newly-hatched chicks are placed

placed in the top of the cabinet and this water was passed from an outside boiler which in turn was heated by an oil lamp.

The first incubator of this type held approximately 100 hen eggs. Regulation of the temperature was obtained by a thermostatic capsule filled with ether or methylated spirit or a mixture of same. This capsule expanded when heated and the action of the expansion was used to work either a damper or slide to control entry of the heat into the machine or to allow excess hot air to escape from the egg compartment. In order to meet the demands of large poultry keepers who wished to incubate hundreds of eggs at a time, this type of machine was later developed by placing several of these compartments in long rows and heating the

developed which proved a great improvement in many ways. This was the hot air machine. In this type, air is heated in a heating compartment and passed through the machine in metal pipes. The heating unit can be arranged to work in conjunction with oil lamps, electric heaters or gas burners. This type of machine usually proved to be more sensitive than the hot water model and easier to work. These incubators are used extensively by pedigree breeders and all poultry farmers who prefer to hatch their eggs in small units.

With the expansion of the poultry industry and the setting up of large commercial hatcheries, the need arose for large incubators, holding several thousands of eggs, that would take up little space and

be practically automatic in operation. This need was met by the invention of the Cabinet incubator in the U.S.A. It was later developed and improved in this country and today the Cabinet incubator is a precision built appliance that is practically fool proof.

Usually it consists of a double walled chamber built of selected timber and divided into two compartments. In the setting compartment the trays are so fitted that they can be tilted by some outside medium. In the hatching compartment they are placed at the same level as no turning of eggs is necessary after the nineteenth day. These compartments are heated by electric elements or hot water pipes or a combination of both. The air is circulated by means of a fan which ensures even temp. through the whole of the compartment. This fan can be driven by small electric motors or petrol engines.

The largest Cabinet incubators accommodate up to 50,000 eggs in a space little more than 1,000 cubic feet. The temp. and humidity is automatically controlled and when required, the eggs can be automatically turned at preset intervals. Alarm and safety devices are fitted to ensure freedom from breakdown with consequent loss of eggs. These incubators are now used extensively in all parts of the world.

Artificial I. has the following advantages over the natural process: (1) a much larger number of eggs are able to be successfully hatched; (2) the chickens are free from vermin; (3) they are free from the danger of being trodden to death by the hen. Game-keepers use I. largely for rearing pheasants, and, of course, on large poultry-farms they are indispensable. Various forms of foster-mothers, artificially warmed by lamps or hot water, have also been contrived in which the chickens can be successfully reared after they are hatched. In due course they are moved to cold brooders, and finally to poultryhouses.

Bacteriological I. differ from those for birds in that the heating surface generally surrounds all sides of the I. chamber, and there is usually no special apparatus for keeping the air moist. There are various forms, some heated by warm water, others by warm air. They are mostly square or rectangular in shape, but some bacteriologists prefer cylindrical forms.

Human I. have also been designed for rearing children too weak to survive under ordinary conditions. The first was that of Dr. Tarnier (1880), used in Paris, and an improvement was made in Heer-on's, which is used at various hospitals and institutions throughout Great Britain.

See T. Christy, jun., *Hydro-Incubation*; L. Wright, *The Book of Poultry*, 1911; J. H. Sutcliffe, *Incubators and their Management*; H. H. Stoddard, *The New Egg Farm*. For bacteriological I., see catalogues of Heaton of London; Cambridge Scientific Instrument Co., Cambridge; and P. Lequeux, Paris.

Incumbent (Lat. *incumbo*, I bend or lean), word which is said variously to

signify 'diligent residence,' or 'assiduous application to duties.' In eccles. law it includes such rectors, vicars, and perpetual curates as have been duly instituted in their offices. Every I., or holder of a parochial benefice, has care of souls in his own par. (see IMPROPRIATION), and it is a spiritual offence for any other clergyman to preach, read prayers, or otherwise officiate in the par. of another I. without authorisation of the diocesan bishop. An I. is *ex officio* chairman of the vestry, and upon him devolves the duty of keeping the local register of marriages, baptisms, and burials. Two I.s. may in certain circumstances effect an exchange of livings (see also GLEBE, as to extending poor livings) by deed. An I. may be deprived of his living for illiteracy, minority, simoniacal offences (trafficking in benefices), lack of holy orders, conviction for felony, and other crimes, and such spiritual offences as affirming doctrines contrary to the Thirty-nine Articles, heresy, schism, and demanding payment for administering a sacrament. An I. may resign by application to the ordinary, but a resignation is invalid unless assented to by the bishop.

Incunabula is a word derived from the Lat. meaning a cradle or birth, but has come to be used in a very specialised sense to signify the earliest books printed from type, and more particularly those printed before the year 1500. Since the invention of printing in Europe is generally attributed to Gutenberg whose first books appeared about half-way through the fifteenth century, we are limited by definition to a period of about fifty years. The rival claim that printing was invented earlier in the century by Laurens Coster of Haarlem is without corroboration, and in fact there are no known books in existence bearing his imprint. The first book ascribed by Gutenberg, probably in collaboration with John Faust, was the *Mazarin Bible* which was printed in a Gothic type, with initials and ornamental borders illuminated by hand. It is interesting to note that the early printers aimed not at creating a new style suitable to the medium of type, but emulated the finest examples of existing illuminated manuscripts. Chief among the notable books which came from this press were the *Pentateuch* of 1457, the first book in the list of printing to bear a date, and the *Latin Bible* of 1462.

Printing was first introduced into Italy by two Ger. printers, Sweynheym and Pannartz, who set up a press at the monastery of Subiaco in about 1464, and this country rapidly achieved supremacy in the art. Venice became pre-eminently the centre, attracting many printers, among them Da Spira, Jenson, Ratdolt and, later, Aldus. The 16th cent. was the time to which these printers turned for their models, and were written in the 'humanistic' script, a refinement of the caroline minuscule. This 'round,' cursive and easily legible hand became, fortunately for the eyesight of the modern world, the prototype of what are now known as 'roman' type-faces. Germany, the only country not to adopt this design, still uses

type-faces based on the Gothic letter, or *lettre de forme*. The length of the eds. of the earliest books was governed chiefly by the capacity of the type to stand up to the printing press, and numbers averaged about 200-300 copies, rising to about 500 by the end of the century. The fact that the total number of books printed in Venice alone by the end of the century is estimated to have been about two million, gives some idea of the rapid expansion of printing from its inception. Paper, then a staple product of Italy, was chiefly used for books, though frequently a smaller part of an ed. was printed on vellum. Many eds. were illustrated with woodcuts, some of which were afterwards illuminated by hand. A notable illustrated book was Aldus' *Hypnerotomachia Poliphili* which contained over 500 woodcuts. Caxton set up his press at Westminster in 1476, though his first book, *The Histories of Troy*, also the first to be printed in Eng., was printed at Bruges a year earlier. This was followed by an ed. of the *Canterbury Tales*, and in 1481 he issued his first illustrated book, *The Mirror of the World*. Caxton used a formal Gothic type and also 'secretary,' a cursive version of the same face. His achievement lay not so much in the quality of his work which was not equal to the best It. printing of the time, as in the fact that his prolific output did much to establish a national Eng. language.

The difficulties of establishing classifications of I. spring from the fact that so many early books are not only undated, but also bear no printer's name. Identification is most safely made from the type-face. Haebler's *Typenrepertorium der Wiegendrucke* (1905) takes this approach. Other earlier bibliographies are Panzer's *Annales Typographici* (Nuremberg 1793), and Hain's *Repertorium Bibliographicum* (Stuttgart 1826-38). In more recent times we have Robert Proctor's *Index to the early printed books in the British Museum* (1894) which has been revised and expanded since the author's death.

**Indecency.** Indecent exposure of the person in public is a common law misdemeanour, punishable by fine or imprisonment with hard labour or both, whether there be an intention to violate the canons of decency or not. The public exhibition of obscene writings, pictures, or photographs is punishable by fine and imprisonment, and magistrates have power to issue search warrants for the seizure and destruction of obscene books or pictures in places where such articles are suspected to be sold or dealt with for profit. Advertisements dealing with venereal diseases also come within the Acts prohibiting the exhibition of indecent writings or prints, and are punishable on summary conviction with one month's imprisonment or a fine of 10s. Sending indecent prints, books, etc., through the post is punishable either on indictment with twelve months' imprisonment with hard labour, or summarily by a fine of 210. An indecent assault upon any female is punishable by imprisonment

not exceeding two years, under the Offences against the Person Act, 1861. Sodomy or bestiality is a felony punishable by penal servitude for life, or imprisonment, not exceeding two years, with or without hard labour. The Criminal Law Amendment Act, 1885, provides a punishment of not more than two years' imprisonment with or without hard labour, in the case of any male person publicly or privately committing, or being a party to the commission of, any act of gross I., with any other male person. Scots law is practically similar in all respects.

**'Indefatigable.'** The Brit. battle-cruiser launched in 1911, 12-in. guns, 23 knots. On the outbreak of the First World War she was stationed in the Mediterranean. During the battle of Jutland (q.v.) she was a unit in Adm. Beatty's fleet, but was sunk by the Ger. battle-cruiser *Von der Tann*. A Brit. fleet aircraft carrier of 23,000 tons, laid down in 1939, now bears the name.

**Indefinite.** In mathematics, was originally used for infinite, but at the present time is generally only to be found in the phrase I. integral, to denote the process of integration, without reference to limits.

$\int x^n dx$  and  $\int_a^b x^n dx$  are respectively I. and definite integrals.

**Indemnity, contract, express or implied,** to keep a person immune from liability under a contract into which he has entered, or intends to enter. Contracts of fire, marine, and accident insurance (but not life assurance) are instances of such contracts. An I. differs from a contract of guarantee or suretyship, because the liability of a guarantor or surety depends upon a third person, the prin debtor, making default, whereas the person under a liability to indemnify another is bound to do so, irrespective of the default of other persons. A contract of I. is not, but a guarantee is, within the Statute of Frauds (see CONTRACT, and FRAUDS, STATUTE OF), and, therefore, the form of an I. is immaterial. Other familiar examples of I. are the implied contracts by prin. to indemnify their accredited agents from all liability properly incurred in relation to the agency. This prin. in the law of agency also applies as between partners. A contract to indemnify a person against liability for an unlawful act is void. In a wider sense I. connotes that unwritten prin. of our law which enjoins the obligation of the state to compensate a person whose private property has been compulsorily taken for public purposes; a prin. which, in particular cases, finds statutory expression in various private Acts of parliament supplemented by the Lands Clauses Acts.

**Indenture, practically synonymous with a deed (q.v.),** since the requirement of 'indenting' the edges became unnecessary to the validity of an instrument. An I. was an instrument made between two or more persons with distinct interests, as opposed to a deed poll or instrument made by one person or set of persons having

identical interests. Formerly, copies of an instrument were always made on the same parchment, or paper, and then cut into as many parts as there were copies, with a wavy or scalloped line, so that the genuineness of any part could at any future time be established by merely fitting the edges together. Other formalities having taken the place of 'indenting,' the designation of a deed as an *J.* is now mere surplusage.

**Independence:** (1) The cap. of Buchanan co., Iowa, U.S.A. It is situated on the Illinois Central, and on the Chicago Rock Island and Pacific Railroads, also on the Wap-sipuncion R. The Ln. is noted for farming, and has iron foundries. Pop. 1,300. (2) The cap. of Montgomery co., Kansas, U.S.A. It is situated on the Verdigris R., and on the Atchison, Topeka, and Santa Fe, and the Missouri Pacific Railroads. It is the centre of a natural oil and gas region. The chief industries are agriculture and the manuf. of cotton. Pop. 11,500.

**Independence, American War of, see UNITED STATES OF AMERICA, History.**

**Independence Day,** commemoration observed in the U.S. on July 4. It is a legal holiday, and is kept up by various celebrations, such as patriotic speeches and meetings. It commemorates the Declaration of Independence on July 4, 1776.

**Independence, Declaration of, see DECLARATION OF INDEPENDENCE.**

**Independence Hall,** building in Philadelphia, where, on July 4, 1776, the Declaration of Independence was adopted by Congress and read to the people. The Continental Congress met there. It is now used as an historical museum.

**Independent Labour Party** (the 'I.L.P.'), throughout the greater part of its list, the largest and most influential of Brit. Socialist organisations. The I.L.P. was founded at a conference held at Bradford in 1893 over which J. Keir Hardie, M.P., presided, and, as illustrative of the close connection of the man with the party it may be mentioned that Keir Hardie was elected in 1913 to the chairmanship, so that he might preside over the coming-of-age conference. Other distinguished chairmen have been J. Ramsay MacDonald, M.P., and Philip Snowden, M.P. (later Lord Snowden). The fortunes of the I.L.P. have been intimately bound up with those of the Labour Party which it created and to a certain extent dominated. On Feb. 17, 1930, the Prime Minister, Ramsay MacDonald, severed his connection with the I.L.P., an example that was almost immediately followed by Philip Snowden, the Chancellor of the Exchequer. The reason for these resignations was that during the last few years the organisation had increasingly adopted the policy and approved the actions of the more advanced section of the Labour Party in the House of Commons. James Maxton, the leader of this small but energetic group and one of the severest critics of the Labour Cabinet, then became chairman of the I.L.P., and held the post again from 1934-39. The I.L.P. counts

for nothing to-day. Its fall after the First World War was due to faction. A substantial section of its membership was strongly pro-Soviet, and a part broke away when the Communist Party was formed. The I.L.P. became the advocate of 'Socialism in our time' and at one Labour Party Conference after another its socialist resolutions were voted down by the trade union block vote. The experience of the second MacDonald Gov. brought the dispute to its crisis, and the I.L.P. under James Maxton seceded from the Labour Party and, in the secession, split again, the anti-secessionists joining with Sir Stafford Cripps and Mr. Ernest Bevin's Society for Socialist Inquiry and Propaganda to form the short-lived Socialist League. What remained of the I.L.P. under Maxton had its main influence on C.L. decide. In the Second World War it was 'anti-war,' not on pacifist grounds, but because it persisted in denouncing this war also as an 'imperialist war.' It also rejected the view that socialists can unite with capitalist parties in any circumstances without betraying Socialism. It is not a little ironical that the present Labour Party Gov. has not only passed sev. nationalisation Bills but would seem to be committed to a policy of Socialism well within our time.

**Independent Order of Oddfellows, see GODELLIOWS.**

**Independents, or Congregationalists, see CONGREGATIONALISM.**

**Indeterminate,** in mathematics, used in sev. connections. Simultaneous equations are called *i.* when an insufficient number of such equations is given. Thus the equation  $5x + 3y = 21$ , where  $x$  and  $y$  are independent unknown quantities, is *i.*, and has an infinite number of solutions. In the differential calculus the name *indeterminate* is given to such expressions as the limit of  $\frac{a^x - x^a}{a - x}$  when  $x = a$ ,

which take the form  $\frac{0}{0}$ , or similar forms.

It has  $\infty \cdot 0 \times \infty$ , etc.

**Index,** in mathematics, that number placed after a quantity to denote the power to which the quantity is to be raised. Thus  $a^4 = a \times a \times a \times a$ . It follows that  $a^4 \times a = a^{4+1} = a^5$ , and, more generally,  $a^m \times a^n = a^{m+n}$ , where  $m$  and  $n$  are positive whole numbers. This is one of the fundamental laws of algebra, and is known as the Index Law. So also  $a^m \div a^n = a^{m-n}$ , and  $(a^m)^n = a^{mn}$ . It has been found convenient to make use also of fractional and negative indices, which at first sight seem unintelligible. To ensure that the Index Law  $a^m \times a^n = a^{m+n}$  shall be true for all values of  $m$  and  $n$ , integr. and fractional, positive and negative, we give to such quantities as  $a^{\frac{1}{2}}$  and  $a^{-1}$  those meanings to which

the formula leads us. Thus  $a^{\frac{1}{2}} \times a^{\frac{1}{2}} = a^{\frac{1}{2} + \frac{1}{2}} = a^1 = a$ ,  $\therefore a^{\frac{1}{2}} = \sqrt{a}$ , and more

generally  $a^p = \sqrt[p]{a^p}$ , also  $a \times a^1 = a^{1+1} = a^2$ ,  $a^2 = a^1 \times a^1$ ,  $1$  and  $a^1 \times a^1 = a^{1+1} = a^2 = 1$ ,  $a^1 = \frac{1}{a^1}$ , and more generally  $a^{-1} = \frac{1}{a}$ . See also LOGARITHM.

**Indexing**, operation of compiling an alphabetical list of statements and allusions contained in files or in a book or series of books or periodicals, together with the page number folio number or other reference to where the indexed matter is to be found. An index differs from a 'table of contents' by being a more complete analysis of the contents, and by being arranged in alphabetical order. The term as applied to the list of books and periodicals have been in use since the sixteenth century and derives from the Lat. word *index* which was used by Cicero and other classical writers in the same sense. Calendar, inventory and register were alternative terms which have now been superseded. Specialised lists such as that of the contents of a library is more properly termed cataloguing (20), while an index of the works of a single author or a works on a given subject comes under the heading of bibliography (21). There were a number of indexes to books published in the sixteenth century, among the most notable being that to the 1566 ed. of Polydore Vergil's *Anglica Historia*. Many indexes of the seventeenth and eighteenth centuries were intended more as whimsical enticements to the reader to dip into the contents rather than as serious analysis of the subject matter. The index of the *Spectator*, *Lettler*, and *Guardian* (1757) was, however, a model of its kind. During the nineteenth century and after, a number of scientific and informative works have made an indispensable aid to the reader while the growth of periodical writing brought into being a number of cumulative indexes, an early example of which was W. F. Poole's *Index to Periodical Literature* (New York, 1833). A 'general' index contains entries under proper names, place names, and subject headings. It may however be advisable to provide two indexes to a single work, one being an Index of names and the other an Index of Subjects. In a subject index the selection of catchwords presents the indexer with a problem which he can only solve by an understanding of his author and by an assessment of what the reader to whom the work may be unknown would look for. Correct alphabetical order is never so simple a process as it may seem to the inexperienced. It should be carried through either to the end of the initial word or to the end of the initial group of words, that is, to the first mark of punctuation. If, however, there are two or more entries with identical catchwords, as may happen when indexing references to two persons with the same name, then the order is decided by the words (e.g. Christian name or initials) which follow the comma after the catchword. Indexes prepared for press may be compiled either on the slip

system or the card system. The slip system consists of allotting a slip to each letter of the alphabet or each subdivision of a letter (e.g. Aa-Ak, Al-An, Ar Az). The entries are then made on the appropriate slip. The card system differs from this in that each reference is written on a separate card which bears the appropriate catchword as a heading. The cards may then be sorted into alphabetical order and added when all the entries are complete. The invention of the card index system is attributed to the Abbe Jean Rozier (1734-1805) whose *Tables des Mémoires de l'Académie des Sciences* was published in 1773. It is the only suitable method for compiling an expansive index of e.g. files to which constant additions are being made. In book indexing if there is a number of references under one entry, the references should themselves be classified under appropriate sub-headings which may be arranged either alphabetically or in chronological order or in the order in which they appear in the course of the book—the choice being determined by the nature of the work to be indexed. See H. B. Whitley, *How to make an Index* 1900. (R. Cutter, *Rules for a Dictionary Catalogue* (4th ed.) 1904.) A. I. Clark, *Manual of Practical Indexing* 1933.

**Index Librorum Prohibitorum**, the title of a list of books prohibited by the Roman Church on doctrinal or moral grounds. The origin of ecclesiastical prohibitions dates from a very early period in the history of the Church and the earliest known statement is the *Index Librorum Prohibitorum* promulgated by Pope Gelasius (491). What may be regarded as the first Roman Index was published by Pope Paul V (1609) through the Inquisition at Rome and was confirmed by Clement VIII (1616). When the books in the list of catalogues are allowed to be read after correction or alteration with the approval of the orders of the papal authorities the list is termed *Index Librorum Prohibitorum*. Later Pope Sixtus V organised a special congregation, consisting of a prefect, cardinals, consultants, and censors of books, the proceedings being governed by rules laid down by Pope Clement XIV in a constitution issued in 1773. All books considered pernicious to Roman Catholics and all versions of the Bible by unauthorised persons are placed on the Index by the Congregation of the Holy Office.

Obscene books are forbidden except 'classical authors, ancient or modern', on account of the elegance of their diction which is not to be used for teaching children. The ban still remains on Gibbon's *Decline and Fall*. The works of David Hume, John Stuart Mill and Oliver Goldsmith for his list of England are proscribed along with Sterne for his *Sentimental Journey*. Savonarola, Kant, Voltaire, and Goethe share the Index pages with Stendhal and D'Annunzio.

The Book of Common Prayer is also banned. Dante, Copernicus, and Giordano Bruno have been removed.

Any living author placed on the Index



can earn remission by re-writing his book or cutting out the offending passages. Permissions to read forbidden books are granted to students. See T. Hurley, *Commentary on the Present Indian Legislation*, 1908.

**India**, extensive peninsula or sub-continent of S. Asia; after China the most populous country in the world. The pop. of the country approaches 400,000,000 and is composed of a heterogeneous mass of various nations, having different languages, faiths, and customs. Since the beginning of the seventeenth century the hist. of I. has been closely connected with that of Great Britain. In course of time it became a dependency of the Brit. empire and afforded a huge mkt. for her produce and also a great held for Brit. capitalists. At the same time it developed a great number of highly profitable secondary industries of its own. The name by which the country is known, 'India,' is derived from the Persian name *Hind*, which has been handed down to us through the Gks. and Romans. This name is derived from the Sanskrit name given to the R. Indus (*Sindhu*). At times the name Hindustan has been applied to the whole peninsula, but this is incorrect, since the name applies only to a particular region of that country. The natives of I. are so mixed that they have no one name for the country, but after the Brit. occupation the official native form of the name was fixed as *Hind* and the Anglicised form as *I*. The Indian Independence Act, 1917, brought to an end the whole structure of Brit. Gov. in I. and from Aug. 15 (1947) the Indian Empire is represented by the dominion of I., the dominion of Pakistan, and Terr. of Indian rulers formerly under the suzerainty of the King-Emperor. Except where otherwise stated herein 'India' includes the dominion (now Republic) of I., the dominion of Pakistan, the states of I., and Tribal Areas. Fuller details for Pakistan under most heads will be found in the separate article PAKISTAN.

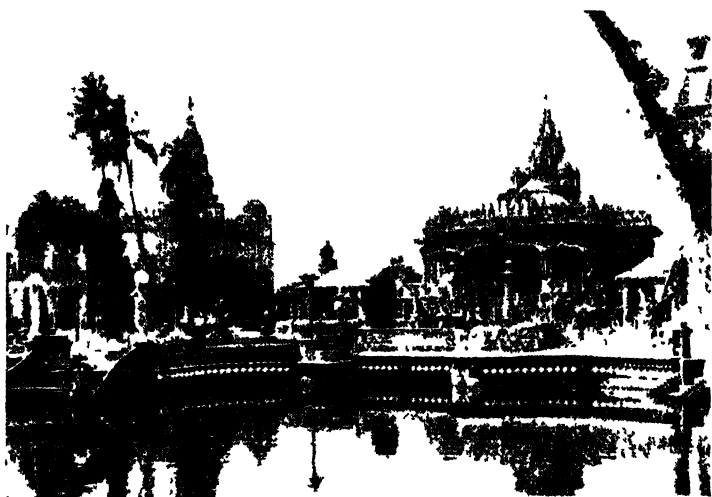
**Boundaries: Area and Population.**—The political boundary of I. matches with Persia and Afghanistan from the gulf of Oman to Porvilo Schuyekowski on the Taghdumbash Pamir. From this point the frontier, in many parts not clearly defined, touches the Chinese Empire and Nepal, up to the limits of Burma. Continental I., including Baluchistan, extends from 8° to 37° N. lat., and from 61° to 97° E. long. Delhi, the cap. of the dominion of I., lies in 77° E. long., Karachi (Sind), the cap. of the dominion of Pakistan, lies in 66° E. long. The total area of I. proper in 1911 was 1,581,410 sq. m., with a pop. of nearly 389,000,000. The Brit. provs., as distinguished from the Indian states, comprised 55 per cent of the area and about 76 per cent of the pop.

**The country.**—I. is a large peninsula which juts out southward from the mainland of S. Asia. It is a triangle in form, the huge mt. ranges of the Himalayas forming the base of the triangle, whilst the apex runs far out into the Indian Ocean. In its W. coast it is washed by the waters

of the Arabian Sea, whilst on the E. is found the Bay of Bengal. The extreme length of I. is about 1900 m., and its breadth, at its widest part, is about 1600 m., but the peninsula tapers down almost to a fine point, its S. extremity being Cape Comorin. The southernmost point is in the very centre of the tropical region, its lat. being about 8°, whilst the most northerly point is found well within the limits of the temperate zone, i.e. 37° N. Thus the peninsula experiences extremes of weather. The official designation I. includes not only the peninsula already described, but also Burma on the E. together with the is. of the Arabian Sea, and the bay of Bengal, and Aden and Perim, all of which are politically administered as I. On the other hand, Ceylon, an is. adjacent to the S.E. coast of I., is treated and administered separately. In former days—the days of the great companies I. was by no means altogether under the sway of the Brit., for the Dutch, Portuguese, and Fr. had settlements on the coast also. The remains of these settlements may be traced in the various towns which belong to the Fr. and Portuguese even at the present day, e.g. Goa (Portuguese), Pondicherry (Fr.). The chief boundaries of I. are: On the N., the Himalaya Mts., which separate Tibet and China; on the W., the Suliman Mts., which separate it from Afghanistan and Baluchistan; on the S. and S.W., the Arabian Sea and the Indian Ocean; on the E., the spurs of the Himalayas, which separate it from Burma, and the bay of Bengal, an inlet of the Indian Ocean. The geography of I. can be the more easily examined and followed if we divide the whole country up into the three natural divs. into which it falls: (1) The mt. ranges, i.e. the Himalayas; (2) the riv. plains; (3) the peninsula red. or the plateau of I., which goes by the name of the Deccan. (1) *The Himalayas*: This series of mt. ranges is the loftiest mt. system of the world. The range extends for a distance of 1500 m. round the N. boundary of I., and sweeps round in a half bend. The most conspicuous face of the mts. is the S., forming an almost, but not altogether, impassable boundary. In two places the mt. range is severed by streams: the Dihang R. in the E., and the Indus in the W. The mts. soar to a height in places of nearly 30,000 ft. and are continually snow-covered. Nevertheless, since time immemorial distinct and well-known trade routes have been known and communications kept up with the countries N. of the Himalayas in spite of the barrier of the mts. The Himalayas form a double boundary to the N. of I. and send out also spurs and offshoots which fill the country between the Ganges and the parent mts. themselves. On the W. this offshoot is known by the name of the Suliman Mts.; on the N.E. it forms the boundary between Assam and I., being known as the Naga Mts. The boundary between I. and Baluchistan is also formed by the offshoots of the Himalayas, but these latter offshoots by no means attain the elevation

of the others mentioned. The chief passes of the mountainous div. of I. are the Khyber Pass, the Kurram Pass, the Gomal Pass, and the Bolan Pass. These form the chief means of communication between I. and the N.W. *See also HIMALAYA MOUNTAINS.* (2) *The river plains:* This div. of I. is the richest and most populous part. It extends in a broad belt across practically the widest part of I., running from E. to W. From the beginning of hist. we find this part of I. the continual prey of marauding tribes, who sweep down from the hills to plunder. The chief provs. of this part of I. are Bengal (E. Bengal in Pakistan and W.

This comprises the presidencies of Bombay and Madras, together with the Central Provs., Hyderabad, and Mysore. The name of the Deccan was formerly applied to it. Its N. boundary is the Vindhya Mts., a range which stretches for about 800 m. from E. to W., and which has two great peaks at each extremity. In earlier days this formed a fairly effective barrier between the N. and the S. of I., since the range varies in height from 3000-4000 ft. It has long since, however, been pierced by both road and railway, and communication between N. and S. firmly estab. The two sides of this triangular plateau, which has the Vindhya Mts. for a base, are



JAIN TEMPLES AT CALCUTTA

Bengal in I.), the United Provs., the Punjab (divided between the two dominions), and Rajputana. The importance of the int. system, the Himalayas, may be judged when we see the effect of it on the well-watered plains. The riv. system of I. consists of three great rivs: the Indus, the Ganges, and the Bramaputra. The Indus rises on the N. slopes of the Himalayas, sweeps round, and enters at the W. extremity of the range, and waters the Punjab. The Ganges is formed by the amalgamation of the streams which drain the southernmost slopes of the Himalayas, whilst the Bramaputra rises also within easy distance of the Indus in the N. slopes of the Himalayas, flows E. N. of the Himalayas, for some considerable distance and then enters I. at the extreme E. point of that range. It is therefore to be noticed that the riv. system, of such vast importance to the people of I., is the drainage of both the N. and the S. slopes of the Himalaya Mts. (3) *The peninsula proper, the southern plateau of India:*

formed by the E. Ghats and the W. Ghats. The W. Ghats are on an average much loftier than the E. The three chief rivs. of this dist. are the Godavari, the Kistna, and the Cauvery. These rise in the W. Ghats, but discharge into the bay of Bengal on the E. coast. The W. Ghats, in fact, form such a strong barrier on the W. coast that the line of mts. is unbroken by a riv. gorge. The rivs. which rise in the W. Ghats discharging, as already stated, in the bay of Bengal and those which drain the Vindhya Mts. into the gulf of Cambay. Chief amongst the latter may be mentioned the Nerbudda and the Tapti. The three geographical divs. of I. apply, in other respects—in speech, language, race, and characteristics.

**GEOLOGY.** The oldest of these three divs. is the peninsular proper. It has been land for many thousands of years; indeed it was already dry when the Himalaya region was covered by the sea, from the Palaeozoic to the Eocene period. This much is proved by the marine deposits of

the Himalayas. It is in the peninsular that we find the oldest strata; in fact, the age of the Vindhya Mts. cannot be determined. The Himalayan region is one of great compression, in which we find masses of Tertiary rocks of vast thickness, which are overthrust and folded in the most violent fashion. In peninsular I. the oldest rocks consist of gneiss, granite, and crystalline formations. The rocks of this region are intersected by bands of transition strata of very ancient, but undetermined age. The strata are generally found in an undisturbed state, and the Vindhyan formations, as already mentioned, are of great antiquity. In great contrast to these regions is the region which separates the two, and which is known by the name of the Indo-Gangetic plain. This plain is covered with alluvium and sand blown thither by the winds. There is no rise in level between the two great rivers, the Indus and the Ganges. The alluvial deposits of the plain have been subjected to frequent examination and prove to us that there has been a gradual depression of that region even within comparatively recent times. The chief deposits which are found in the Indo-Gangetic plain are gravel, sand, and clay, together with deposits of peat and forest beds. The Delta deposit has also been subjected to close examination, but its depth at this point cannot be exactly calculated. By boring, a depth of some 480 ft. was reached, but this was known not even to approximate to the real depth. In one part of the bay of Bengal, which washes the Delta, the currents have apparently washed away the deposit brought down by the rivers. The depth of the bay here is over 1800 ft., so that, allowing for the fact that the rest of the soundings which are taken in the immediate neighbourhood only give, at most, 10 fathoms, we can come to the conclusion that the deposit from the river has filled up the bay in that part, and that therefore the alluvial deposit equals the depth of the bay, i.e. about 1800 ft. The alluvial deposit of the plain has been proved by boring to be over 1000 ft. in thickness and we are able to gather that the depression of the Indo-Gangetic plain is of recent date, and that it is probably connected with the elevation of the N. mountainous dist., the Himalayas.

**CLIMATE.**—Not unnaturally, in a country which stretches from the tropical regions to well into the temperate zone, many differences will be experienced in the climate. Any extreme of climate, then, either of the tropics or of the temperate zone, will be found in I. Its geographical characteristics have great influence on this, especially the huge mt. barrier of the N., which prevents any influence of the plateau of Central Asia, and its peninsular point surrounded by the sea in the S. The whole country experiences three well-marked and well-defined periods—the cool, the hot, and the rainy seasons. The cool months are experienced during Nov., Dec., Jan., and the early part of Feb. The weather is then at its pleasant-

est, dry and cool. The hot season which follows belongs, at any rate officially, to March. From this time until the middle of June, there is a continual rise of temp. which is experienced with greatest severity in Central and Southern I. The contrast in temp. during the cool months is between N. and S., but during the hot months the contrast is between the interior and the coast. It is in the interior of Northern I. (Punjab) that the greatest temps. are experienced during this period. The monsoons or the rainy season usually begin about the middle of June. These monsoons are caused by the absorption by the sun of moisture from the ocean, and if the monsoons fail, then follows one of those famines which periodically do so much harm to I. The rainy season lasts for about three months, and during that period rain is generally experienced all over I. The rainfall is by no means, however, equal all over I. Parts especially in the Deccan, are left after the rains with a very small supply of water, hence arises the necessity for a good system of irrigation and canals. At one place the average rainfall for the year is 500 in. (Cherrapunji). The season which immediately follows the rains is the most unhealthy of all. The monsoons cease about the middle of Sept., and the months which follow, Oct. and Nov., may be regarded as the Indian autumn. During this period malaria and malarious diseases are usually rife especially in the N.

**LION.**—The lion, although at one time threatened with extinction, is now found fairly plentifully. A variety peculiar to I., i.e. manesless, is found here. The chief beast of prey, however, is the tiger, which is practically ubiquitous. The advance of civilisation and the attacks made on this animal by sportsmen have caused the tiger to become rarer than formerly, but it is by no means exterminated. The man-eating tiger is usually an old animal that has become too enfeebled to be able to catch his ordinary prey, but kills often from sheer desire to destroy, and is a real curse to the country in which he is found. It is no unusual thing to hear of a man-eating tiger which has killed over 100 persons. The favourite method of tiger shooting is from the backs of elephants. The leopard is found in even greater numbers. The destruction to life and property caused by this animal is enormous. The cheetah is another type often confused with the leopard proper. Amongst the other wild animals to be found are the bear, boar, wolf, fox, bison, elephant, and rhinoceros. Wild goats and wild sheep are found at considerable altitudes in the Himalayas. The wild ass is also to be found in parts but is practically unapproachable owing to its timidity and speed. The domesticated animals are chiefly the cow, ox, and buffalo. The two latter are used principally as beasts of burden, the cow being regarded as a sacred animal by the Hindus. Horses are bred, and but recently the breed has been improved by the importation of foreign blood; they are used but little amongst the working native pop. Donkeys and mules

are used very considerably. Sheep and goats are plentiful, as is also the pig, but this latter animal is of little use, since by the majority of the native pop. it is despised and abhorred. Monkeys abound, but they are regarded as sacred, and are therefore in perfect security and become very tame. Deer of all kinds abound throughout the country, and they are of use chiefly in providing sustenance for the beasts of prey.

The rivers are infested with crocodiles and alligators. Poisonous snakes abound, the most deadly being the Cobra dâ (Capello the hooded cobra). Another dangerous reptile is the Russ-chun snake; specimens of this latter are usually carried about by the native showmen, who cause them to assume a position as if dancing whilst they charm them with music. Many of the snakes, however, are innocuous, and the dangerous ones are gradually receding before the march of civilisation, since the gov. offers a reward for every one which is killed.

The birds of I. are of the usual tropical varieties. The birds of prey include the vulture, the eagle (many specimens of which are to be found), and falcons of all kinds. Herons and kingfishers abound, and are much sought after on account of their plumage. Waterfowl are particularly numerous, and almost all the game birds found in Europe abound also in I., e.g., pigeons, partridges, quail, plover, and duck. The jungle fowl of I. are supposed to be the ancestors of our domestic fowl. The supply of fish in sea, lake, and riv. is exceedingly abundant, and, indeed, forms a very great proportion of the food of the poorer classes.

**FLORA.**—I. has no peculiar botanical features of its own. Its geographical position, however, as in many other respects, causes its vegetation to be various and plentiful. Its products are those of the tropics and of the temperate zone. Rice has always been the staple product. The products of the tropical regions are tobacco, sugar cane, and spices. Tea is grown on the slopes of the E. Himalayas, and has become one of the main products of I. In Assam the tea plant is found growing wild. Coffee has been grown in the S. parts of the peninsula, but with somewhat indifferent success. The chief trees which are found are the mango, orange, banyan, and bamboo. The teak and various other trees useful for timber are produced in the more hilly dists., whilst on the slopes of the Himalayas are found the cedar, fir, and pine. But within recent times a Forestry Dept. was set up for I., and the forests, which previously had suffered much owing to wanton destruction, are now more carefully preserved. The total area of forest land under the control of this dept. is above 160,000 sq. m. Of this total, 98,000 sq. m. are reserved and worked scientifically by the State. This forestry dept. has been taken over by the Indian Dominions Gov. The most indigenous flower is the water-lily, and European flowers are found in the greatest profusion at the present time. The whole of the vegetation of I., however,

may be regarded as an extension of that found in the prin. dists. which immediately border on the peninsula, i.e. of China, Persia, and Malaysia.

**CENSUS OF 1911.**—The census of I. for 1931 gave a total pop. of 338,119,000, divided into 256,686,500 for the provs. and 81,361,000 for states and agencies. The census of 1911 returned the total pop. as 388,007,955—an increase of nearly 50,000,000 in ten years—the pop. for the provs. being returned as 295,812,000 and for the states and agencies as 93,189,000. Just over 19,500,000 people form the urb. pop. of I., and slightly less than 339,500,000 her rural pop. Thus the urb. pop. is to the rural approximately as 1:7. In all I. there are 935 women to every 1000 men; in the Punjab the figure is 817. To be set against this serious discrepancy is the estimated total of 9,000,000 widows, largely very young, debarrd from remarriage by the stern decree of Hindu custom. The tns. of a pop. of 5000 and upwards number 2703 and the vils. 655,000. For all I. the density is 246 to the sq. m., in Bengal it is 779, which is far higher than that of Great Britain. Of the provs., Sind with 91 to the sq. m. has the least density of any prov. A city is a tn. with no fewer than 100,000 inhab. Of these there are 58 in India, and 23 of them are new, owing their rise to the development of ports and industry. By far the greatest number of tns. and vils. come into the class with fewer than 500 inhab.—a fact which accounts for the slight density of pop. In the last fifty years, Calcutta (India), has trebled its pop.; Madras (India) and Bombay (India) have nearly doubled; and Lahore's (Pakistan) pop. has increased fourfold. The influence of the rise of industries and overseas trade on the growth of cities is seen in such places as Karachi (Pakistan), Jamshepur (India), Ahmedabad (India), Trivandrum (Trianamcor), and Sholapur (India). Karachi had 98,000 inhab. fifty years ago; in 1911 it had 359,500. In the same period Jamshepur, the seat of the Tata steel and iron works, increased from 3672 to 148,711; Ahmedabad from 141,141 to 591,267; Trivandrum from 27,887 to 128,365; and Sholapur from 61,91 to 212,620.

**Political Divisions.**—The total area of I. may be divided into Provs. and Native States, and former Agencies (which were in political relations with the Indian Gov. and more or less under the control of Brit. officials). Reference to the present political orientation of the Indian states is made below.

The following tables give the provs., unions, and former states of the dominions of India and Pakistan with areas, total pop., and density per sq. m.; and the areas and pop. of the former agencies.

**CITIES AND TOWNS.**—The prin. cities of the Dominion of India, the Dominion of Pakistan, and other cities belonging to States are:

**Dominion of India:** Calcutta, 2,108,000; Bombay, 1,439,000; Madras, 777,500; Ahmedabad, 591,300; Delhi, 522,000;

## THE DOMINION OF INDIA

Provinces and Capitals	Area in square miles	Population	
		Census 1941	Per square mile
Ajmer Merwara (Ajmer)	2,400	583,893	244.0
Andamans and Nicobars (Port Blair)	3,143	33,768	10.7
Assam (Shillong)	49,473	7,088,131	143.2
West Bengal (Calcutta)	26,912	19,341,746	718.1
Bihar (Patna)	70,368	36,548,051	519.4
Central Provinces and Berar (Nagpur)	130,475	19,788,584	151.6
Coorg (Merkara)	1,593	168,726	106.0
Delhi (Delhi)	574	917,939	1,599.2
Himachal Pradesh	11,251	936,000	83.2
Kutch (Bhuj)	8,161	501,000	59.2
Madras (Madras)	127,610	53,766,810	421.3
Orissa (Cuttack)	55,835	12,774,544	228.8
Panth-Piploda	25	5,267	210.7
East Punjab (Simla)	35,681	11,628,919	328.8
United Provinces (Allahabad)	106,247	55,020,617	517.8
<i>Unions</i>			
Saurashtra	31,845	3,522,000	110.5
Mataya	7,536	1,838,000	243.9
Vindhya Pradesh	21,610	3,569,000	145.0
Rajasthan	121,000	12,000,000	99.2
Madhya Bharat (Malwa Union)	46,273	7,130,000	151.4
Patiala and East Punjab	10,119	3,424,000	338.4
<i>States merged into :—</i>			
Bombay Province (174)	26,951	4,402,000	163.3
Orissa Province (23)	23,547	4,046,000	171.1
Central Province and Berar (15)	31,719	2,834,000	89.3
Madras Province (2)	1,144	483,000	333.7
East Punjab Province (3)	370	810,000	2,189.2
Bihar (2)	623	208,000	334.0

## THE DOMINION OF PAKISTAN

Provinces, Chief States and Capitals	Area	Census 1941	Per square mile
West Punjab (Lahore)	62,100	16,870,900 <sup>1</sup>	271.7
Sind (Karachi)	48,136	4,535,008	94.2
North-West Frontier (Peshawar)	14,263	3,038,067	213.0
East Bengal (Dacca)	54,100	44,081,381	814.8
Baluchistan (Quetta)	131,002	877,835	6.4
Bahawalpur (Bahawalpur)	17,494	1,341,209	76.6
Khairpur (Khairpur)	6,050	305,787	50.5

<sup>1</sup> Estimated 1947<sup>2</sup> Inclusive of Sylhet, formerly part of Assam

## THE FORMER AGENCIES

Agency	Area in square miles	Population (1941)
Baluchistan :		
Kalat State and Las Bela State	7,132	63,000
Baroda and the states of Western India and Gujarat :		
Baroda	8,236	2,855,000
Western India, etc.	43,547	6,050,000
Central India :		
States : Indore, Bhopal, and Rewa	52,017	7,506,000
Deccan and Kolhapur States	10,870	2,785,000
Eastern States :		
Cooch Behar, Tripura, Mayurbhanj, Patna, Bastar, and Kalahandi	65,210	8,087,000
Madras States :		
Malayalam States of Travancore	7,662	6,070,000
Cochin	1,403	1,422,000
North-West Frontier :		
Chitral and four other states	9,061	588,000
Punjab States :		
Patiala, Bahawalpur, Khairpur, Nabha, Kapurthala, and Jind	49,521	6,504,000
Rajputana :		
Jodhpur, Udaipur, Jaipur and Bikaner Tonk, Palanpur, Bharatpur, Dholpur and other states	132,559	13,670,000

Cawnpore, 487,300; Amritsar, 391,000; Lucknow, 387,200; Howrah, 379,300; Nagpur, 302,000; Agra, 284,100; Benares, 263,100; Allahabad, 260,600; Poona, 258,200; Madras, 239,100; Sholapur, 212,600; Bareilly, 192,700; Jubbulpore, 173,300; Patna, 171,700; Surat, 171,400; Meerut, 169,300; Trichinopoly, 159,500; Bangalore, 248,300; Mysore, 150,500; Jamshedpur, 148,700; Ajmer, 147,200; Moradabad, 142,100; Jullundur, 141,300; Coimbatore, 130,300; Salem, 129,700; Hyderabad (Sind), 128,200; Calicut, 126,300; Bhatpara, 117,000; Aligarh, 115,600; Ludhiana, 117,600; Shikharpur, 111,100; Saharanpur, 108,200; Gaya, 105,200; Jhansi, 101,200.

Mongolo Dravidian type, Bengal and Orissa. Mongoloid of the Himalayas, Assam and Butma the Dravidian (*q*) type, which extends practically throughout the whole of the peninsula proper.

*Religion* — The chief religions of I, with the adherents to each as given by the 1911 census as follows: Hindu 244,930,006 (i.e. 61 per cent of the total pop.) Mohammedan or Muslim, 92,080,096 (i.e. 24 per cent), leaving 11 per cent for the remaining religions, including Indian Christians, 6,316,549; Sikhs, 5,691,447; Jains, 1,149,286; Parsis, 114,890; Jew, 22,180. Besides these, there are 2,141,489 persons des-



MONGOLOID WOMAN OF NEPAL



INDIAN SIKH OF JAMMU

*Dominion of Pakistan* Lahore, 671,600; Karachi, 59,500; Dacca, 217,200; Rawalpindi, 181,100; Multan, 111,800; Sialkot, 138,300; Peshawar, 111,000.

*States* Hyderabad (Hydrabad State), 731,100; Srinagar (Kashmir), 207,800; Indore (Malwa Union), 205,700; Lashkar (Malwa Union), 182,500; Jaipur (Jaipur), 175,800; Paroda (Baroda), 133,800; Kolar Gold Fields (Mysore), 133,800; Travancore (Travancore), 128,200; Bikaner (Bikaner), 127,200; Jodhpur (Jodhpur), 126,800; Bhavnagar (Saurashtra Union), 102,800.

*Racial Types* — The whole pop. of I may be divided into at least seven distinct racial types. The following is a list of the types, and the districts in which these types most frequently prevail: the Turko-Iranian type, Baluchistan and N.W. Frontier; the Indo-Aryan type, Punjab, Rajputana, and Kashmir; the Scytho-Dravidian type of Western I; the Aryo-Dravidian type, United Provs. and Bihar;

and it is 'tribes' including persons of the Animist religion, and of this total 700,000 believe in magic and strive to procure impersonal forces. Unspecified numbers number 401,577 persons. The Hindus or Mohammedans who are increasing at a greater rate than the Hindus are influenced by the caste system and other Hindu characteristics. The oldest and most primitive of all these religions is that of the Animist. From the Animist to the Hindu is, however, a great step, the chief characteristics of the Hindu faith being the belief in a large number of gods, in the caste system, and in the cow as a sacred animal. Buddhism, Jainism and the religion of the Sikhs can be held to be almost offshoots of the original Hindu faith, and in fact, other beliefs which can be held to differ far more than Buddhism from Hinduism are regarded simply as sects or offshoots of the original Hindu faith. Of recent years the hostility between the Hindu and the

Moslem has sometimes seemed to be considerably on the decrease, but after the partition of India in 1947-48 there were formidable outbreaks of religious conflict especially in Bihar and the Punjab. Whereas, however, there are innumerable sects and schisms amongst the believers in the Hindu faith, there are but two sects amongst the Muslims—the Sunnis and the Shīahs. The Sunnis in I. are greatly in the majority. The original Moslem pop. was found amongst the Mongols and Pathans who invaded I. conquering races, and even to the present time it is possible clearly to distinguish the descendants of these conquering races who were originally Moslem, from the converts of the conquered race who followed the faith of the conquerors less from religious conviction than from the desire to better their lot, and whose descendants since have become as fanatical as the descendants of their previous conquerors. The majority of Buddhists are found in Burma. Most of the Parsis are in Bombay (in 1911 there were 89,500); of the Sikhs over 3,000,000 are in Madras, Travancore, and Cochin. The Indian Christian pop. of Bombay is over 320,000; and there are some 1,000 Jews there. In the Native States the totals (in 1931) were: Hindus, 61,467,000; Muslims, 10,857,000; Buddhists, 94,000; Tribal, 2,501,000; Indian Christians, 2,430,000; Sikhs, 1,115,000; Jains, 799,000; Parsis, 13,000; and Jews, 3000.

**HINDU PHILOSOPHY.** The Indian mind, as is evident in Sanskrit literature, is strongly disposed to metaphysical speculation, and this tendency may be seen in the old religious lyrics. In the later age of the hymns the pantheistic idea becomes dominant and finds its outlet in cosmogonic speculation, becoming fully developed in the Brāhmana period. The fundamental conception of this doctrine is expressed in the two synonymous terms *brahman*, originally 'power of growth,' then 'prayer,' or 'devotional impulse,' and *ātman*, 'breath,' 'self,' 'soul.' The recognition of the essential sameness of the individual souls emanating all alike from the ultimate spiritual essence (*parama-brahman*) involved difficulties for speculative minds, which turned for a solution of their problems to metempsychosis (*samsāra*), speculations which were not approved by the great body of Brāhmanas engaged in ritualistic practices. The body of treatises propounding the pantheistic doctrine, the Upanishads, were, later admitted into the sacred canon as appendages to the ceremonial writings, the Brāhmanas; and they thus form literally 'the end of the Veda,' the *Vedānta*, but their adherents claim this title for their doctrines in a figurative rather than a material sense, as 'the ultimate aim and consummation of the Veda.' It is difficult to determine the time when the so-called *Darśanas* ('demonstrations'), or systems of philosophy, were first formulated; but they certainly developed from the tenets enunciated in the Upanishads. Among the different systems six are generally recognised as

orthodox as being consistent with the Vedic religion: *Purva-mīmāṃsā* and *Uttara-mīmāṃsā* (*Vedānta*); *Sāṅkhya* and *Yoga*; *Nyāya* and *Vaiśeṣika*—each pair being more closely related to each other than to the rest. See further under SANKHARA; SĀṆKHYA; SANSKRIT LANGUAGE AND LITERATURE; VEDĀ and VEDISM; VEDĀNTA, UTTARA MĪMĀṂSĀ, or UPA-NISHAD; VĪSHIṢṬ; and YOGA. For the tenets of the two great anti-Brahmanical sects, the Jānas and Buddhists, see under JAINISM; BUDDHA and BUDDHISM.

**LANGUAGE.**—Today the very speech of the people in I. and Pakistan has become a matter of bitter communal dispute. Most of the peasants continue to talk the speech of their fathers but the literate minority and politically-conscious individuals and students argue about the rights and wrongs of the 'Hindu-Urdu controversy.' The sub-continent possesses hundreds of languages and also over 500 dialects; but when tribal idiom and local variants have been eliminated, we have some 15 major or literary languages, some alike, and some, especially the Dravidian south, very different. But the Hindi-Urdu advocates can rightly claim that so far as the ordinary person, especially in the N., is concerned, the only common language is bazaar Hindustani—a pidgin form of mixed High-Hindi and Urdu, which together constitute the same language written in different scripts, and compose the natural speech of nearly 260,000,000 people. This is also the literary language of 140,000,000 people, and the third largest language in the world. Unfortunately this bazaar Hindustani is a basic tongue, ill-adapted for the expression of ideas more complex than simple direction and marketing. Meanwhile Eng. remains the normal language of communication between the better educated Indians from all parts of the sub-continent in a very similar way to that in which Lat. in the Middle Ages was the *lingua franca* of the nobility and ecclesiastics all over Europe. But just as the Lat. of the Middle Ages was far removed from the classical Lat. of the schools, so the Eng. of I. shows signs of becoming a very different tongue from the Eng. of England to-day. The difference is due to ignorance, historical circumstance, and natural development. There remain, however, a large number of able Indians—business and professional men—who use Eng. with the greatest facility, but use words and forms of speech which sound unfamiliar to the contemporary Brit. ear. The speed, and height of pitch and tempo in Indian speech in Eng. is its most constant quality, and the extreme form is found in Anglo-Indians (Eurasians), who all, to the non-Celtic ear, seem to speak like Welshmen.

Some 225 languages are recorded in linguistic surveys as vernacular in I. and Burma. Briefly, they may be divided as follows (1) W. Hindi, with its main dialect, Hindustani, in Urdu and Hindi forms; (2) E. Hindi; (3) The central group: (a) Punjabi (including Lahnda or W. Punjabi), (b) Sindhi, (c) Rajasthani,

(d) Gujarati, (e) Kashmiri (main dialect *Kashawari*); (4) *Pahari*, divided into E., W., and Central; (5) The E. group: (a) Bengali, (b) Bihari, (c) Oriya, (d) Assamese; (6) S. India group: (a) Marathi, (b) Saurashtri, (c) Hindustani. For further details on the languages of I. see *INDO-EUROPEAN LANGUAGES*.

**GOVERNMENT AND CONSTITUTION.**—The present govs. of I. and Pakistan are functioning under the Gov. of I. Act, 1935, but suitably adapted to meet the current needs. The framework of the new Constitution of I. has now been thoroughly discussed in the Union constituent committee of the Constituent Assembly and it is unlikely that there will be any major alterations in the draft Constitution between now and the time when the Constitution is estab. and operative. On the Constitution of Pakistan see *PAKISTAN*. The following is an analysis of the Constitution of the Union of I.

The Union of I. is, in spite of its name, a federation. The various governmental powers whether executive, legislative, or judicial, are distributed between the centre and the units of the federal union. The federation is, however, of the Canadian type rather than of the Amer. or Australian; the powers not allocated to the units belong as in Canada to the centre, whereas in the U.S.A. and Australia they remain with the units (see *FEDERATION*). The executive head of the union is a President, elected by an electoral college consisting of all the elected members of the central legislature and of the various state legislatures. The votes are weighted so that the voting strength of the central legislature shall be the same as that of the state legislatures put together. The President's term is five years, but he is eligible for re-election. He can be removed by impeachment for violation of the Constitution. As in Britain, the president (like the king) is a constitutional head acting on the advice of ministers responsible to the legislature. The relations between the President and his ministers are much the same as between the king and his ministers in Britain. There is a Parliament for the Union consisting of the President and of two Houses, the Council of States and the House of the People. The Council of States, or Upper House, consists of not more than 250 members. Each state sends one representative for every million of the pop. for the first 5,000,000, and one additional representative for every additional 2,000,000. The election is indirect through the state legislatures. The Council of States is a permanent body not liable to dissolution but one-third of the members retire every second year. The House of the People, whose normal life will be five years, consists of not more than 500 members. Election is direct, and on the basis of adult suffrage. There is to be not less than one representative for every 750,000 of the pop. and not more than one for every 500,000. In previous constitutions there were separate electorates for such minorities as the Moslems, Sikhs, and Christians. This is now abolished, but seats are re-

served on the pop. basis for Moslems, the scheduled castes, certain aboriginal tribes, and, in Madras and Bombay, for the Christians as well. The question of reserving seats for the Sikhs remains to be decided, and there is a feeling among certain sections that even the system of reserving seats for religious minorities is inconsistent with the idea of a secular state. But, whether these proposals are ultimately retained or not, the electorate will in all cases be joint. There is no special reservation of seats for Anglo-Indians, but the President may nominate not more than two members of the community to the House of the People. Any bill, except a money bill, may originate in either House; it is to be passed by both Houses and assented to by the President before it can become law. If there is a conflict between the two Houses, the President must summon a joint session, and the bill, with such amendments, if any, as are agreed to by a majority of the members of both Houses, is deemed to have been passed by both Houses. There is a special procedure for money bills. The various subjects of legislation have been enumerated as exhaustively as possible in three lists: List I. or the Union List, List II. or the State List, and List III. or the Concurrent List. Any Union law on a subject in the concurrent list overrides any State law on the same subject in the event of any conflict between the two. The Union List contains over 90 entries, including such subjects as defence, external affairs, citizenship, posts and telegraphs, railways, shipping, airways, broadcasting, and atomic energy. The State List contains about seventy entries and includes justice (excepting the Supreme Court), police, local gov., agriculture, public health, and education. The Concurrent List contains about forty entries, and includes such subjects as criminal law, criminal and civil procedure, marriage and divorce, contracts, trade unions, and welfare of labour. Residual powers are allocated to the Centre. In circumstances requiring immediate action when Parliament is not in session, the President has a limited power to make Ordinances, which have the same effect as an Act of Parliament, but must be laid before both Houses as soon as Parliament meets. There are also provisions on emergencies. If the President is satisfied that a grave emergency exists, which threatens the security of I. by war or domestic violence, he may make a proclamation to that effect, and thereupon the Union Parliament is empowered to make laws even in respect of the matters enumerated in the State List. Although the Constitution is of the federal type, there is not a double chain of courts, one to administer federal law and the other to administer state laws. All the courts form a single hierarchy, at the head of which is the Supreme Court of the Union. Immediately below the Supreme Court are the State High Courts, and below them are the subordinate courts of each state. Every court in this chain will, subject to the usual pecuniary and local limits, administer the whole law of



the country, whether made by the Parliament of the Union or by the State Legislatures. The Supreme Court has exclusive original jurisdiction in disputes between the Gov. of I and one or more States or between two or more States *inter se*. It has also an appellate jurisdiction over the State High Courts in all cases involving questions of law as to the interpretation of the constitution and in certain other types of cases. Broadly speaking, its appellate jurisdiction corresponds to that exercised by the Privy Council of Britain before the Indian Independence Act came into force. It is further clothed with a special jurisdiction for the enforcement of the constitutional rights guaranteed by the constitution.

**Indian Civil Service**—The service that carried on the work of governing India in the time of the British occupation. It also included the public works, forest, and telegraph departments, though strictly these did not belong to the Indian Civil Service. The service was limited to about 1200 members appointed by the Secretary of State for India. Vacancies were filled by open competition every summer in England; the examination being the same as for Class I of the Civil Service of England (later known as Administrative Grade). The successful candidates had to pass one or two years' study in England, and pass an examination in riding and an examination in the Indian Penal Code and Code of Criminal Procedure, the principal vernacular language of the provinces to which they were assigned, and the Indian Land Act. In addition the optional subjects were Hindi and Mohammedan Law, Sanskrit, Arabic, Persian and Burmese. The pay began at about £720 a year, and candidates could secure high positions as judges and administrators. After twenty-five years of service a pension of not less than £1000 a year was given. Under the terms of Command Paper 7192 of Aug. 1947 members of the Indian Civil Service were given the option of continuing to serve the Govs. of I and Pakistan or retiring with compensation. Pensions and compensation alike are paid under arrangements made with the Govs. of I and Pakistan. Of the 1200 officials of the service there were more Indian than British (629 Indian and 500 British in 1943). Many British civil servants are still serving in India or Pakistan. See Sir E. A. H. Blunt *The Indian Civil Service, 1937*, also L. S. O. Malley, *The Indian Civil Service, 1901-1930*, 1931.

**INDIAN LAW**—The laws of British India are in part universally applied and in part applied only to certain classes. There is a right of appeal to the Privy Council in England, while high courts are held in the Provinces of Madras, Bombay, Bengal, Agra, Bihar, Punjab, Central Provinces, and Berar. These courts had (1943) 11, 11, 18, 11, 10, 11, and 6 judges, respectively, while the N.W. Frontier Province, Sind, Coorg, Ajmer-Merwara, and Baluchistan had judicial commissioners. The high court of Calcutta was up to 1948 the highest judicial authority for Assam, but in April of that year a separate high court was set up for Assam. In descending

order of authority are the courts of session for criminal cases and the courts of magistrates (first, second, and third grade). For Delhi the high court of Lahore was formerly the highest judicial authority, but there is now a high court at Lahore (see PAKISTAN) and also at Karachi, and at Dacca, besides a judicial commissioner's court at Peshawar. In the lower civil courts each province has acts and regulations peculiar to itself and usually a sessions judge presides or a district judge with subordinate judges and *munsifs* below him. There are revenue courts presided over by revenue officers, and a number of small courts for trying minor cases. All cases pertaining to family relations covering inheritance, marriage, adoption, etc., are judged according to whether the parties are Hindu, Moslem, or Christian. The criminal law, however, until 1947 was part of the King's jurisdiction and some branches of the Hindu law had been prohibited by English law. The laws of the Hindus and the Moslems are both of religious origin. The former is derived from the Vedas and its interpretation the Veda itself being believed to be divinely inspired, but the date of the revelation and the person to whom it was revealed are unknown (see *Indian Literature* below). The main features of Hindu law are the rigid caste system and the inviolability of the family. See CASES. Buddhist law is more secular and omits many of the earlier regulations of the Hindus with regard to women and the family. Mohammedan law is also religious in intent, as Mahomet is believed to have been divinely inspired. The Mohammedan laws of inheritance prevail in Pakistan and in Muslim districts of the Dominion of India, whereby all but a third of a person's property is distributed among his descendants in a manner prescribed by the Koran. The proportions of the distribution, however, vary according to whether the interpretation followed is that of Hanafi or of Shafi. The Hanafi code is the more prevalent in India. The civil judges and magistrates in Indian courts are mostly of Indian nationality, while in the higher courts also there is a large proportion of Indians.

**EDUCATION**—The system of education which exists in India at the present time owes its existence entirely to the British Government, but it has always been found to be most successful when, as far as the natives are concerned, it has been based upon some system previously set up by tradition or by the efforts of the natives themselves. From the earliest days I cannot be said to have been a primitive country, it had its system of education in its own peculiar literature, at a time when its future European conquerors were wrapped in the mists of ignorance themselves. We find traces of Indian literature and education as far back in the history of that country as we can go, and many of the institutions of which we find evidence are similar to the early educational institutions of Europe and Western Asia. The real impetus to education, i.e. modern education in India, came from the missionaries, who had

studied the vernacular in order the more easily to continue their work, and who aimed also at the teaching of Eng. to the natives, in order that they might attain to the culture of the W. After a number of colleges had been estab. in I., the gov., after a long report had been made to them, estab. three univs. one at Calcutta, another at Madras, and a third at Bombay. This was also accompanied by a scheme of local education which was, in principle, very thorough, and which extended throughout every prov. Schools receiving gov. aid were set up everywhere, and a properly graduated system of education which extended from the elementary school to the univ., was estab. A system of State Scholarships existed by which it was possible for a boy to pass from the vil. school to the univ. There were also state scholarships awarded by local govs. and by the Gov. of I., to enable the holders to study in the United Kingdom for two or more years. In recent years the desire for secondary education and a univ. course was, amongst a certain class, very great; but (1931) in the primary schools less than 5,000,000 attended out of a total pop. of nearly 340,000,000 (1931 census). Some remedial steps were taken and a permanent grant of nearly £4,000,000 was made annually for primary schools. Technical schools and industrial schools were set up all over the country. Engineering, veterinary, and agric. colleges have done much good work, and have been very largely attended.

The returns made in the census of 1931 are as follows:

	Literate	Illiterate
Males	23,969,751	129,808,571
Females	4,169,105	138,354,143

(these figures exclude persons aged 5 years or under and some 3,000,000 persons not enumerated by literacy). The census of 1911 shows a good increase of literates during the inter-census period 1931-11, the percentage of literates being 12.2 (1941) compared with fewer than 7 per cent. in 1931.

The total expenditure on education in 1911-42 was £23,145,000 (or Rs. 3,086 lakhs).

In the dominion of I. education is undergoing great expansion in accordance with plans for post-war development prepared by the Central Advisory Board of Education in 1944. It is estimated that these plans, which will modernise all branches of education, will take 10 years to complete. An All I. Council for technical education has surveyed the needs of the country as a whole, and the Central Gov., in co-operation with the prov. govs., has sent abroad some 1400 scholars for higher technical training and research. Reorganisation of 54 existing technical institutions and the estab. of 160 others are contemplated in the prov. five-year plans. Special provision is being made for the training of high-grade engineers and technologists; and the gov. proposes to estab. central higher technological institutes, at or near Calcutta, and Bombay, each with facilities for 2000 undergradu-

ates and 1000 post-graduates. (See also PAKISTAN.)

There are nine univs.: Calcutta (founded 1857), Madras (1857), Bombay (1857), Punjab (1882), Patna (1917), Nagpur (1923), Andhra (1927), Agra (1927), and Utkal (1943). There are also five unitary teaching and residential univs.: Allahabad (founded 1887), Lucknow (1920), Dacca (1921), Delhi (1922), and Annamalai (1929); two denominational univs.—the Hindu Univ. at Benares (1916), and the Muslim Univ. at Aligarh (1920); and three univs. in Indian States—Mysore (1916), Hyderabad (Osmania) (1918), and Travancore (1937). At all the univs., except that in Hyderabad, teaching is mostly in Eng.; at the Osmania Univ. it is in Urdu. In some provs., secondary and intermediate education is controlled by Boards; in 1942-43 there were seven of these Boards. Educational institutions are divided and described as 'recognised' and 'unrecognised,' according as they conform or otherwise to the standards prescribed by the Dept. of Public Instruction. There are approximately, in what was formerly Brit. I., 219,200 'recognised' institutions with 13,258,000 scholars and 37,000 'unrecognised' with 701,000 scholars.

**Broadcasting**—All I. Radio is a Dept. of the Central Gov. which controls broadcasting in I. There are 9 stations and 15 transmitters in operation. There are also 7 receiving stations in operation at Bombay, Calcutta, Delhi, Madras, Peshawar, Dacca, and Trichy.

**SOCIAL CHANGES IN THE VILLAGE.**—Various factors have made for changes in the Indian vil. in the last decade or two—education, a period of prosperity or adversity, the services supplied by the gov., the univ. the motorbus, and the propinquity of a large tn. In the eyes of those who have known I. in the days of the Brit. Raj, the psychological changes at least seem at first sight mostly for the worse. Many good judges think that litigation has increased; many comment on the increase of corruption, and some, as did Gandhi, deplore the growth of the acquisitive spirit; the spread of the communal virus is only too evident and hardly counterbalanced by the blind desire for freedom. This change has affected all the traditional forms of authority, and is tending to narrow the gulf, often still very wide, between those above and those below. The Hindu villager's almost crazy fear of pollution at the hands of the untouchable is or has been matched by an almost superstitious reverence for the Brahmin. But as the untouchable becomes more human so does the Brahmin become less divine. In the Hindu vil. caste gives degree an added force. But the narrowing of the gulf between Brahmin and untouchable suggests that the force is weakening and that caste is relaxing its age old hold on Hindu society generally. The two tests are food and marriage. So much weaker now are the barriers due to food that amongst those who accept European ways of life inter-dining is universal, irrespective of caste or creed—though difficulties still remain

where the difference is of both caste and creed. Marriage is a more serious affair, and till recently it presented an almost insuperable barrier to lovers divided by caste or creed. Marriage is still not common between Brahmin and non-Brahmin, or between followers of different creeds, but amongst the intelligentsia the barrier is less formidable. But in the vil. the food and marriage barriers are as strong as ever and communalism has done nothing to weaken them. The sanction behind caste is a religion so ancient, and all embracing that any social change is difficult without its assent. On the purely material side there are many changes for the better. The 300 per cent rise in prices which set in sharply in 1912 put more cash into the peasant's pocket than ever before and he wisely used it to pay his debts and redeem his land. For the first time for at least two generations debt was no longer a millstone round the peasant's neck. Wherever the peasant is prosperous or the tie with the Army was strong change is evident in the sphere of habit and fashion. Thus in dress lighter materials have replaced the heavier mill-made cloth of homespun, silk has replaced cotton, heeled shoes have replaced slippers. One gold earring is worn in place of many and the nose-ring and anklet have been renounced. In the house the brick floor is found to be cleaner than the old-fashioned floor of mud plaster. Furniture is more elaborate and cooking vessels more numerous. Some of the girls are even giving up the purdah for the modes of the W. Whence, in fact, most of the new ways have their origin; as too, perhaps the slackening in religious observance.

**OCCUPATIONS OF THE PEOPLE.**—The great mass of the pop. of I. is occupied in agric. work. This is not to be wondered at in a country where the accidents of birth and bp. combine to make it difficult for the people to do anything other than follow the chosen occupation in a given place. Each Indian vil. is practically self-contained, and as far as possible the gov. provides that the land shall be held by peasant proprietors. The bulk of the pop. lives in the vils., and the caste system tends to crush any natural ambition which a native may have. Further, the differences of race and religion tend to make it difficult for any native to emigrate from place to place as his ambition dictates. The vast majority of the natives are contained in the vils., and are self-supporting. They engage in cattle and sheep breeding and the occupations of the country. The material and the implements used are usually manufactured by the natives in the vils. themselves. The present age has seen, however, a great change come over some parts of I. In the W., for example, large cotton factories have been set up, whilst the manuf. of jute is one of the staple industries of Calcutta. This has necessitated the founding of factories, and both industries have taken a strong hold of the natives. Other indigenous industries are silk-rearing and weaving, shawl and carpet weaving, wood-carving, and metal-working. In Assam and the lands

of the lower Himalayas many of the natives are engaged in tea-growing. Agriculture, however, still remains, and probably will remain, the greatest of all the industries of I., its most important branch being the tea-industry, which employs about 1,000,000 workers. The development of the seaports and the increased demand have caused a great change to come over the I. that in pre-Brit. days exported only the spices, cottons, fabrics, and other luxuries which the W. demanded. Wheat and rice are exported nowadays in huge quantities; raw cotton, oil, seeds, raw jute, tea, opium, hides, and indigo are amongst the next most important of all the exports of I., to which can be added manufactured cotton goods, hardware, machinery, clothing, and coal. Through the initiative of Lord Linlithgow, an E. Group Supply Council was formed during the Second World War for the supply by various Empire countries of munitions to the imperial forces in N. Africa, the Middle E., Malaya, and elsewhere. This great scheme of making munitions E. of Suez was based on I. which country thus had an opportunity of securing a large share of in a lucrative trade.

**Agriculture.**—The total number of the pop. supported by agriculture, including forestry and the raising of livestock, was according to the census of 1931 about 110 m. In every prov. there is a dept. of agriculture. There are staffs of experts and a central staff, with a fully-equipped central station, research institute, and college for post-graduate training of private students and of those who have completed the agric. course in prov. colleges; a civil dept., veterinary dept. for the prevention and cure of cattle diseases, and a dairy research institute. Following the recommendations of the Royal Commission on Agriculture, an imperial council of agric. research was set up by the Gov. of I. with the object of promoting agric. and veterinary research throughout I. The production and introduction of improved strains of crops is still the chief feature of the work of agric. depts. although progress in other directions is now evident.

The chief crops and the production in the year 1913-41 were as follows:

Crop	Acres sown	Field (tons)
Rice . . .	91,117,000	30,664,000
Wheat . . .	33,961,000	9,741,000
Sugar-cane . .	4,231,000	5,848,000
Tea . . .	837,000	1573,773,600
Cotton . . .	17,127,000	13,626,000
Jute . . .	701,000	1,541,000
Linseed . . .	3,353,000	381,000
Mustard . . .	5,361,000	921,000
Sesamum . . .	4,119,000	447,000
Castor seed . .	1,543,000	140,000
Ground-nut . .	9,808,000	3,323,000
Coffee . . .	198,000	17,000
Rubber . . .	143,500	186,684,000

<sup>1</sup> Yields of tea and rubber are given in lb

<sup>2</sup> Cotton and jute in bales of 400 lb.

The following table shows crop estimates (1947-48) for the dominion of I. :

Crop	Area (acres)	Yield (tons)
Wheat . . .	20,207,000	5,316,000
Rice . . .	59,850,000	18,760,000
Sesamum . .	3,704,000	333,000
Cotton . . .	10,932,000	12,116,000
Rape and Mustard . .	4,389,000	782,000
Linseed . . .	3,338,000	364,000
Ground-nuts .	9,974,000	3,454,000
Maize . . .	7,755,000	2,111,000

<sup>1</sup> Bales

Great benefits have accrued from irrigation, the development of which began a

great effort, it is hoped, will yield another 2,000,000 tons of food a year.

The livestock census in Brit. I. (excluding the United Provs. and Orissa) for 1940 is the most recent available: Cattle, 87,674,800; buffaloes, 22,115,500; sheep, 25,183,000; goats, 30,212,000; horses and ponies, 1,000,900; mules, 40,270; donkeys, 1,157,100; camels, 428,600; pigs, 1,955,400; poultry, 61,128,300.

The lands under the control of the prov. forest dept. are classified as 'reserved forests' (forests intended to be permanently maintained for the supply of timber and pulp, or for the protection of water supply or the prevention of soil erosion), 'protected forests' and 'unclassified'.



*Indian State Railways*

#### WOMEN SPINNING COTTON YARN IN AN INDIAN VILLAGE

century or more ago under Brit. engineers. In the past two decades the Lloyd Barrage (Sukkur) and canals (Sind), the Sutlej Valley and Havell schemes (Punjab), the Sarda Canal (United Provs.), and the Mettur Dam (Madras) projects have been successfully completed, and a sixth canal, the Thal, is being constructed. The total area under irrigation is nearly 60,000,000 ac.

For centuries I.'s primitive, wasteful farming methods have left her vast pop. at the mercy of recurrent famine. The Indian Gov. plans to reclaim six million idle acres by tractor in an effort to grow its own food. This acreage represents ten per cent of the cultivable land now lying idle and is planned to reclaim the six million acres within seven years, while 4000 tube wells are to be sunk at an outlay of £205,000,000, which will in time be more than recovered from the soil. This

forest land. Reserved forests cover about 72,000 sq. m. (Central Provs., 19,422 sq. m.); Madras, 15,620 sq. m., Bombay, 10,523 sq. m., Bengal, 6,935 sq. m., Assam, 6,680 sq. m., United Provs., 5,213 sq. m. Protected forests cover 6,569 sq. m., and 'unclassified' 16,630 sq. m. Total area of forests, 95,157 sq. m.

*Minerals.*—The chief minerals are coal and petroleum. The Damodar Valley in Bihar and Bengal contains the greater part of the coal resources of I., and in quality it is suitable for industrial development. In 1938 the output of coal was 28,342,906 tons. The output of crude petroleum was 87,000,000 gallons. Other minerals are: salt (14 million tons), manganese ore (967,929 tons), iron ore (2,743,675 tons), saltpetre, (148,824 cwt.), gold (331,000 oz.) nearly all from Mysore. Monazite, chromite, tungsten ore and ilmenite are increasing in importance.

**Manufactures.**—The chief indigenous industry, after agriculture, is the weaving of cotton cloths. Other important indigenous industries are silk-rearing and weaving, shawl and carpet weaving, wood-carving, and metal working. These are mostly surviving anc. vil. handicrafts. In 1939 there were 10,100 factories subject to the Indian Factories Act, employing 1,751,137 persons (including 239,414 women and 9403 children) (no child may be employed for more than 30 hrs. a week). There were in the same year 420 cotton mills in I., including the Indian states, mostly in Bombay and Ahmedabad. In 1939-40 production was 1235 million lbs of yarn and 878 million lbs. of woven goods. Excluding Indian states and gov. factories there were in 1939-40: 106 jute mills (mostly in or near Calcutta), 110 rice mills, 58 tanneries, 150 tile and brick factories, 16 shipbuilding yards or workshops, 1000 tea factories, 110 foundries, 19 iron and steel smelting and steel rolling mills, 266 sugar factories, 293 oil mills, 112 motor and coach-building works, 168 tobacco factories, 16 paper mills, 6 breweries, 20 lac factories and 108 silk mills.

The latest available statistics (1949) of mills, factories etc., are given as follows for I. as a whole, but excluding Indian States and gov. factories:—

Industry	Establishment	Workers
Cotton spinning and weaving mills . . .	819	439,000
Jute mills . . .	109	304,000
Cotton-spinning and pressing factories . . .	1861	124,000
Railway and tramway workshops . . .	97	51,500
Rice mills . . .	1314	48,600
General engineering . . .	464	16,500
Electrical works . . .	125	11,700
Printing, bookbinding etc. . .	687	31,300
Tanneries and leather works . . .	61	11,100
Jute presses . . .	65	11,700
Tile and brick factories . . .	168	18,200
Shipbuilding and engineering . . .	16	20,500
Tea factories . . .	1061	67,100
Foundries . . .	105	6,300
Iron and steel smelting and steel rolling mills . . .	21	47,600
Saw mills . . .	64	5,600
Petroleum refineries . . .	4	2,600
Woollen mills . . .	15	9,200
Sugar factories . . .	330	86,000
Stone dressing . . .	11	100
Oil mills . . .	291	16,600
Kerosene tinning and packing works . . .	36	5,700
Motor works and coach building . . .	117	8,000
Tobacco factories . . .	171	22,500
Paper mills . . .	17	10,000
Lac factories . . .	22	2,300
Silk mills . . .	112	5,500

With regard to cotton spinning and weaving, the number of spindles in all I.

in 1941-42 was over 10,000,000. The production of yarn in that year was 1,577 million lb. and of woven goods, 1093 million lb.

**FINANCE.**—By the system of decentralised finance initiated by Lord Mayo in 1870 the Central Gov. assigns to the prov. govts. a fixed share of the revenue collected by them under specified heads. As a result of the Montagu-Chelmsford reforms the finances of the Central Gov. and those of the provs. were almost completely separated, the provs. retaining all income from land revenue, irrigation, excise, stamps etc., while the Central Gov. had the income from communications and income tax. On the introduction in 1937 of prov. autonomy, there was a further change, and from April 1 of that year the provs. have had a definite share of the proceeds of income tax; and a prescribed share of the proceeds of the excise duty on jute is assigned to the jute-producing provs. Some of the prov. govts. receive ann. grants-in-aid from the Central Gov. and a share of the additional duty on imported salt. The Central Gov. bears all expenditure on defence while the provs. are responsible for the charges of their own services and also for expenditure on finances. The provs. govts. frame their own budgets, can raise loans and impose additional taxation.

Land revenue is the oldest and the most important source of revenue. It is levied according to an assessment on estates or holdings. In the greater part of Bengal, Bihar, and Orissa, and in some dists. of Madras, and in Agra and Oudh, the assessment was fixed permanently at the end of the eighteenth century, while it is fixed periodically at intervals of from 12 years to 40 years over the rest of I. The gross land revenue in 1913-14 was nearly £23,000,000. Opium is a declining, though still large, source of revenue. In former Brit. ter. the cultivation of the poppy for opium is confined to the United Provs., though owing to war requirements, the area under poppy was increased there. Opium is also produced under special supervision in the Central Indian, Rajasthan, and Gwalior States; and it is bought in its crude state by the gov. at fixed rates. In 1926 the Gov. of I. announced its intention to restrict export except for medicinal purposes and exports to foreign countries ceased at the end of 1935. The gross revenue in 1913-14 was about £600,000.

The first budget (Dominion of I.) presented to the Dominion Constituent Assembly (Feb. 1918) showed a total deficit of Rs. 268.5 million (£20.1 million). After a contribution of Rs. 45 million from the railway surplus and new taxes the remaining deficit of Rs. 100 million (£7.5 million) was covered by taking direct to revenue the advance payments of corporation tax, leaving a final deficit of Rs. 10.9 million (or £817,500). The first full year's railway budget of I. announced a surplus of Rs. 100 million (£7.1 million). Estimated revenue for 1918-49 was Rs. lakhs 2,35.02. Chief heads: customs, 81.75; central excise,

34.00; taxes on income, 92.13. Estimated expenditure, Rs. lakhs 2,57.38. Chief heads: defence services (net), 1,21.04; debt services, 41.16; civil administration, 31.56; total revenue, £176,203,000; expenditure, £193,033,000.

Budget estimates of prov. govts.: (1948-49): Madras: revenue, 14.55.91, expenditure 55.94; Bombay, 11.38 and 41.02; W. Bengal, 31.19 and 31.97; United Provs., 45.47 and 50.57; E. Punjab, 11.13 and 17.82; Bihar, 21.57 and 20.09; Central Provs., 15.75 and 15.74; Assam, 13.12 and 11.61; and Orissa, 6.82 and 7.51. Total, revenue, Rs. lakhs 242.77 (£142,077); expenditure Rs. lakhs 258.27 (£193,702).

EXPORTS AND IMPORTS.—The following tables give the foreign trade of I. in 1944-45 (values converted at Rs. 13½ to £1).

Exports	Value, in thousands of £
Jute, raw . . . . .	5,625
Jute, manufactured . . . . .	15,318
Cotton, raw . . . . .	5,776
Cotton yarn . . . . .	9,472
Tea . . . . .	29,548
Seeds . . . . .	7,900
Hides . . . . .	6,298
Metals and ores . . . . .	1,055
Wool and woollens . . . . .	1,223
Lac . . . . .	3,560
Milk . . . . .	2,103
Fruits . . . . .	3,444
Coir goods . . . . .	729
Spices . . . . .	876
Rubber (crude) . . . . .	952
Dyes . . . . .	376
Hemp . . . . .	523
Coffee . . . . .	184
Tobacco . . . . .	723
Imports	
Cotton yarn (and manufactured)	2,759
Cotton, raw . . . . .	18,000
Grain and pulse . . . . .	6,009
Mineral oils . . . . .	60,527
Machinery . . . . .	12,225
Iron and/or steel . . . . .	2,672
Other metals . . . . .	2,146
Motor cars and other vehicles . . . . .	1,334
Chemicals . . . . .	7,006
Paper . . . . .	2,181
Instrumenta, electrical . . . . .	1,916
Dyes . . . . .	5,912
Provisions . . . . .	9,049
Spices . . . . .	1,154
Wood and timber . . . . .	17
Hardware . . . . .	2,767
Wool and woollens . . . . .	7,868
Alloys . . . . .	812
Rubber (manufactured) . . . . .	1,081
Tobacco . . . . .	2,177
Glass . . . . .	418
Seeds . . . . .	1,084
Tea chests . . . . .	1,128
Quarry products . . . . .	4,053

On the basis of the trade returns for 1944-45, 6.34 per cent of Indian exports went to the United Kingdom and other parts of the Brit. Empire, and 34.66 to foreign countries. The United Kingdom took 29.24 per cent of these exports,

Ceylon, 9.08 per cent, Australia and New Zealand, 8.60 per cent; and the United States of America, 21.22 per cent. Brit. imports accounted for only 38.81 per cent of the total imports as against 61.19 per cent for foreign countries. The United Kingdom sent 19.94 per cent of the total imports and Australia and New Zealand 5.11 per cent; while the United States sent 25.17 per cent, Persia 21.53 per cent, and Egypt 8.65 per cent. The total imports into the United Kingdom from I. in 1945 were valued at £86,410,000 and exports to India from the United Kingdom were £33,151,000.

In 1934-39 the number of ships engaged in the foreign trade which entered and cleared with cargoes at ports in Brit. I. was 7440, with a tonnage of 10,091,691, nearly 70 per cent of which was under the Brit. flag. The tonnage of vessels which entered with cargoes in the interportal trade of I. was 13,764,794 tons in 1939-40 and cleared 13,517.32 tons. The number and tonnage of vessels built or first registered at Indian ports for 5 years, 1936-40 was as follows: built, 213; registered, 284; tonnage 8996 and 35,970 respectively.

CURRENCY.—The monetary unit of I. is the Indian Rupee, the sterling equivalent of which is 1s. 6d. The coins in circulation are: silver, 1 rupee, equivalent to 16 annas; ½ rupee or 8 anna piece; ¼ rupee or 4 anna piece; nickel, ½, 1, 2 and 4 anna pieces; bronze, 1 pie, equivalent to ¼ anna, ½ pie equivalent to ¼ anna; 1 pie or ½ pie. The paper currency consists of Reserve Bank notes in denominations of Rupees 2, 5, 10, 50, 100, 500, 1000, and 10,000. A 100,000 rupees is called a lakh and is written thus: Rs. 1,00,000; and one hundred lakhs is called a crore and written: Rs. 1,00,00,000. A lakh of rupees when the rupee is 1s. 6d. is equivalent to £7500.

COMMUNICATIONS.—The development of the communications of I. have had a very marked effect upon the increase of trade. The improved system of roads, the increased use of the natural and artificial waterways, and the building of good and reliable railways have been of the greatest importance to industrial I. The great trns are linked together by good roads which are utilised for short distance traffic and even for places some hundreds of miles distant. The rivers, especially the Ganges, the Brahmaputra, and the Irrawaddy are used by the natives to take the produce of the interior to the seaports, whilst the canals also are well utilised.

Railways.—The most important development of all, however, is that of the railways. I. and Ceylon are connected by combined rail and steamer ferry. All the large trns. are linked up together, this having been done by means of good trunk systems for military purposes, and they are now used for purposes of trade. Every dist. of I. is served by a railway, and the thinly populated dists. have specially narrow-gauge light railways. Nearly 700,000 men are employed, and the whole system was thoroughly overhauled before the First World War and linked up

properly. Before partition, almost the whole of the Indian railway system was owned and worked by the Central Gov. There were some lines of minor importance owned by companies, some of which were operated by their owners and some by the Gov. There were also lines in which Indian states and dist. boards were interested. The mileage open for traffic (on March 31, 1945) was 40,509—about 50 per cent on the standard gauge (54 ft.) and 49 per cent on the metre gauge. The net earnings of the railways in 1944-45 were about Rs. 2,865,000 and the contribution paid from railways to general revenues was Rs. 221,000,000. On Aug. 15, 1947, 10,524 m. of railway were divided into two portions: 6650 m. of line in Sind, N.W. Frontier Prov., W. Punjab, and E. Bengal were allotted to Pakistan, and the rest, comprising 33,865 route m., to I. Locomotives were so divided as to ensure that each section had the type suited to its operational requirements. About 73,000 employees operated for Indian Railways after partition. At the end of 1940-41 there were over 102,000 m. of telegraph line carrying 528,000 m. of wire and 1500 m. of cable. There are over 9200 telegraph offices open for paid traffic in I. and over 21,000 post offices in the country. After 1947 there were twenty-three civil aviation companies with an authorised cap. of Rs. 42.2 crores. Air services were operated in 1947-48 on twenty-two routes covering 13,295 route m. by eight transport undertakings using 166 aircraft, 229 pilots, and more than 130 aircrew personnel. M. flown were 4,618,000, and traffic carried, eight million tons. The number of passengers flown was 136,800. There were sixteen daily services and forty-two weekly.

The wireless stations, maintained by the Indian Posts and Telegraphs Dept., numbered twenty in 1940, of which five were coast stations available for general public correspondence and the remainder inland. The same dept. operates the telephone system, though exchanges have also been estab. in Calcutta, Bombay, Madras, Karachi, and Ahmedabad by companies under gov. licence.

**Ports.**—The chief seaports are Bombay, Calcutta, Karachi, and Madras; lesser ports are Port Blair (Andamans), Calicut, and Trivandrum (Madras), and Surat (Bombay).

**DEFENCE.**—The partition of I. involved a div. of the armed forces between the two dominions on a territorial basis, and the result was a div. in the proportion of one-third to Pakistan and two-thirds to I. The armed forces of I. formerly contained a substantial Brit. element, but I. decided to nationalise her armed forces and only a small number of Brit. officers, mostly of the technical and specialist arms, were retained. After partition, regiments and formations of the Indian army, which for many years had consisted of sub-units comprising men of various castes and creeds had to be reorganised into regiments containing only representatives of their own dominion. From the end of the Second World War to Aug. 1947, the net

reduction in the strength of the Indian and Pakistan armies amounted to 1,048,772 men and women. Of these 32,677 were Brit. and Indian Pakistan officers, 12,177 were officers and auxiliaries of the WAC (I.), 49,024 were Brit. other ranks serving with Indian and Pakistan armies, and 1,333,570 were Indian and Pakistan ranks, including 64,321 civilians attached to the two armies. A total of 8668 army units were disbanded, sixty-one Indian State Forces units returned to the States, and eleven Nepalese contingent units returned to Nepal. The old Indian Army prior to Aug. 1947, was divided into three Commands—Northern, Southern, and Eastern. A fourth, Central Command, was raised during the war and disbanded when it was over. Of the Indian divs. which took part in the war eleven were disbanded, leaving three infantry divs., one armoured div., and one airborne div. On Aug. 15, 1947, the army was divided into the Indian Army and the Pakistan Army. The N. Command was allotted to Pakistan and the S. and E. Commands to I. A new Command, Delhi and E. Punjab Command, was formed soon afterwards. There has also been a considerable expansion of transport services. Other additions to the services were tank transporters, amphibians and sev. water transport companies. The army of Pakistan comprises six armoured corps units, eight and a half artillery regiments and thirty-four engineer units. Most infantry regiments of the old Indian Army with a Muslim majority were allotted to Pakistan after partition.

The Royal Indian Navy traces its hist. uninterruptedly from the early seventeenth century when the E. India Company's Marine was formed. Formerly styled the Royal Indian Marine, the service was reorganised between the two world wars on a combatant basis. In 1928 it hoisted the White Ensign for the first time and in 1934, following the passing of the Indian Naval Discipline Act, was redesignated the Royal Indian Navy. As a result of partition the navy was divided between the two dominions. To I. went 4 modern sloops, 2 frigates, 1 corvette, 12 minesweepers, 4 trawlers, a survey ship, and some auxiliary vessels, with a personnel of 200 of whom about forty-five are Brit. officers and 5500 ratings. Indianisation of the navy will be completed in 15 years. A large naval estab. is being constructed in Cochin (H.M.S. *Venduruthy*) which will include specialist training facilities in gunnery, communications, navigation, torpedo, anti-submarine, electrical, and radar branches. The Pakistan navy consists of two sloops, two frigates, four minesweepers, two trawlers, two motor minesweepers, and some harbour defence launches.

The Royal Indian Air Force had its inception in the recommendations of the Skeene Committee in 1926, and in 1932 the Indian Legislature passed the Indian Air Force Act, the first flight being formed the following year. In 1946 it consisted of nine fighter and two transport

squadrons with modern aircraft. On partition seven fighter squadrons and one transport squadron were allotted to I., and two fighter squadrons to Pakistan.

*Indian Army (1857-1947).* After the Mutiny of 1857, and when the Indian empire was taken over by the crown, it was decided that the European army in I. should be amalgamated with that of the crown. Formerly, in the days of the E. India Company's control, the army was organised on a presidential basis, a staff corps being formed in 1861 for each of the Presidencies. This system for a time worked well, but finally the old presidential system of organisation was done away with, and the whole Indian Army was reorganised under the command of a single commander-in-chief. The staff corps became the staff of the Indian Army, and the basis of organisation was one N. and one S. command, together with a separate command for Burma, all under the control of a commander-in-chief of the Indian Army. Previous to this, and during the gov. of Lord Dufferin, the incident usually known as the Peshawar scare (over the Russian occupation of that and another place in Afghanistan) took place, and led incidentally to the formation of the Imperial Service Corps. The princes of I. volunteered to give pecuniary aid to the gov.; this was at the time rejected, but they were later informed that a proposal to place a certain number of native troops in each state at the disposal of the gov., to be trained, drilled, and officered by Brit. officers, would be welcomed. This was done, and gave rise to the Imperial Service troops, whose value and efficiency were tested and proved. In 1939 the defence forces of I. comprised units of the Brit. Regular Army (60,000), the Indian Native Army (140,000), the Indian Army Reserve (35,000), the Indian State forces (about 35,000), the Auxiliary Force (about 24,000), and the Territorial Force (18,000). For police duties and frontier service the regular military was supplemented by frontier militia and local levies. The military forces were organised as the N., S., E., and W. Commands, and the Burma Independent Dist., there being a number of dists. and independent brigades in each command. The Field Army was organised in four divs. and five cavalry brigades. The Brit. Regular Army in I. was paid by the Indian Exchequer and was organised in divs. and brigades with the Indian (Native) Army in the proportion of one Brit. to three Indian battalions. The Artillery Corps at this time was 13,000 strong, organised into one field and six mt. regiments besides various small units—altogether a score of park batteries and a number of field and garrison artillery batteries, the latter with a proportion of Indian drivers. The tank corps units consisted exclusively of Brit. personnel. The Auxiliary Force was organised in 1920 as a second line to the permanent garrison, and was formed by voluntary enlistment of men of Brit. extraction. The Territorial Force, also organised in 1920, was a militia force, and, like the

Territorial Army of Britain, was intended to be a second line replica of the regular army in time of war. The Indian State forces were raised and maintained by the Indian States and trained under the supervision of Brit. officers. In the native army the composition of the regiments was very varied indeed. The troops consisted of men of all races and religions, and these varied naturally with the position of the command. In the ranks of the native army in I. were found Pathans, Sikhs, Punjabis, Mahrattas, Hindus, Gurkhas, together with representatives from almost every race to be found in I. The terms of enlistment were general, and although the native troops had not, up to 1939, ordinarily served overseas, nevertheless they enlisted for service within or without the Brit. empire, and could be taken overseas if necessary. During the First World War, 1,215,000 officers and men of the Indian Army were sent on service overseas from I., the number of Indian troops being 570,000. The total Indian casualties were over 158,000 (deaths, 73,132; wounded, 84,715). Between the world wars some native units served in Iraq and at colonial stations, their maintenance being defrayed by the Brit. exchequer. The infantry and cavalry of the old Indian Army were organised into double companies, each commanded by a Brit. officer, together with a Brit. junior officer. The native officers, risaldars in the cavalry and subahdars in the infantry, issued all orders to the native troops. The senior officer was called the risaldar-major, whilst to each half company was usually attached a junior native officer, who was called a jamadar. A reorganisation of the Indian Army was begun in 1921 to meet defects brought to light in the 1914-18 world war. This consisted of grouping regiments for training purposes, and in 1922 the system was carried a stage further by converting the groups into regiments in the case of the Indian Infantry and Pioneers. The chief reform, however, was that of 'Indianisation,' i.e. having units officered entirely by Indians and without any Brit. cadres. The Indian Territorial Army was also Indianised (see *The Army in India and its Evolution*, 1924, issued under the authority of the Gov. of I.). In the Second World War the Indian Army fought in Burma, N. Africa, Italy and the Middle E., winning over 5000 awards including thirty-one V.C.'s—an Empire record surpassed only by the Army of the United Kingdom. Exclusively recruited on a voluntary basis, the strength of the Indian Army at its peak was 2,250,000, a feature of this expansion being that of the Royal Indian Artillery, which was increased to 81,000 all ranks, and consisted of twelve mt., eleven field, seven anti-tank, two medium and twenty-nine anti-aircraft regiments. The airborne forces of the Indian Army took part in operations leading to the capture of Rangoon (May 3, 1945). The Indian Army's total casualties in the Second World War were 179,935 (killed, 24,338; missing, 11,754; wounded, 64,351; and



79 189 prisoners of war, chiefly on the Burmese front) By Sept 30, 1946, in the process of demobilisation over a million men had left the service the ultimate peace time strength of which had not been finally determined when the partition of I consequent on independence involved the complete reorganisation of the armed forces of I and also the disappearance of the old Indian Army.

**Royal Indian Navy**—In 1926 it was decided to establish a Royal Indian Navy (on a combatant basis) the nucleus of which was to be provided by the former Royal India Marine. This navy at the close of the Second World War, included six modern sloops, three frigates, two corvettes sixteen minesweepers a survey vessel and six modern trawlers. There were also a number of auxiliary vessels. In 1946 naval strength was reduced by demobilisation to 1000 officers and 10 000 ratings. It was decided in the same year to purchase three cruisers from the Royal Navy for the Royal Indian Navy.

**Royal Air Force of India**—Had its beginnings in the Indian Air Force Act (1932) the first flight being formed at Karachi in 1933. On March 12 1944 the King approved the designation of Royal in recognition of the war services of the force. In 1946 it consisted of eight fighter and two transport squadrons with modern aircraft. For the division of all the armed forces on the partition of the country see *Defence*.

**The Indian Princes (before the Partition of India)**—The Indian States numbered 562 of which 327 were relatively of very little consequence and only existed independently as the result of a historical accident. The chiefs on the Afghan frontier are in a different category compared with the Princes of I all being Moslems with a political gravitation towards Kabul and not to Delhi and as regards their internal administration they were to all intents and purposes independent. There are only seven of these border States having no important firm that of the Khan of Kalat with a wild and arid mt country of 75,000 sq m in Baluchistan and a pop. of 305 000 in the small state of Phulera on the Hazara border with an area of 34 sq m. Two of the chiefs the Mahar of Chitral and the Khun of Kalat, have the title of His Highness and a salute of guns. One of the most important is the new state of Swat founded in comparatively recent years by a descendant of Akhbar of Swat on the Peshawar border. Nepal is an independent state but it is not and never has been an Indian state. From the mt mass of the Pannus and Karakorum in the N where political I impinge on central Asia to Cape Comorin in the S a distance of 2000 m. It was possible to travel almost entirely through ter of the Indian princes without touching Brit I from Chitral (which was a Brit Protectorate) one would pass through Gilgit a dependency of Kashmir, thence the route would lie through small Rajput States in the Himalayas, past Simla to the Sikh State of Patiala in the Punjab plains, a country of prosperous

vills and stalwart fighting men, thence to the desert of Rajputana home of the blue blooded Rajputs and memories of ancient chivalry, then on to the sphere of the Marathas in Baroda and Indore secular rivals of the Rajputs. Thence into the great Muslim state of Hyderabad equal in area to Great Britain and then to Travancore with its unrivalled beauty of forest lands and lagoons, and so to Cape Comorin, fabled abode of the goddess Kunnari. In all the Indian states covered some two fifths of the whole of I and contained more than one fifth of the pop. Their subjects were Brit protected persons, not Brit subjects, and they were governed by hereditary rulers under the suzerainty of the Brit Crown. In the administration of internal affairs the authority of the Princes was limited by treaty relationships with the Paramount Power (Britain) and by usage and custom. Brit Indian law did not prevail nor could the Central Indian Legislature legislate for them. The Princes had no relations, however with foreign powers. The great majority of the States are now either merged in Provs of I or in Pakistan or have been integrated in groups or 'unions' so that very few preserve their old identity.

The manner of evolution of this type of autonomous or semi autonomous kingdom is a problem the solution of which is lurid in antiquity. Originating in Hindu political theory it has certainly been influenced by the Brahminical caste system which is at least 3000 years old. This scheme of life harmonised best with a gov in which the ruler administered a small ter with the assistance of a *darbar* or council of ministers, priests, military auditors and representatives of the *castes* or guilds. This *darbar* rule is best illustrated in the more ancient Rajput States of Central I and the oasis of the great Indian Desert some of these being tribal in origin. States like the Rajput *tribal* states and some of the *tribal* states of the S—Mysore, Travancore and Cochin—owed their centuries of existence to the support of the nobles and peasantry.

I obtain a clear view of the position of the states in the political fabric of I of today they must be seen in historical perspective. The long drawn tragedy of invasion the crash of empires and kingdoms the bitterness of religious feuds, are reflected in the evolution of I's minor kingdoms' (Sir Wm Barton). Hindu I in the tenth to eleventh centuries was fortunate up to a point in having found its defenders in the age of terror that was then impending. But for the Rajputs Hinduism would probably have been lost in the surge of Muslim invasion. Unaided the Brahmins could never have held the people to their faith. But although the Rajput cavalry, in 1191 hurled the Moslems back across the battle the victory gained only a brief respite. Bengal, Bihar, and Orissa fell before a handful of Afghan horsemen. A new kingdom was estab (1202), and Moham madanism prevailed until Clive's victory at Plassey in 1757. For the first four

centuries of Muslim rule the chief opponents, the Rajputs, short of man power, could not for long keep the field. Refusing, however, to admit defeat, they fled to the oasis of Rajputana, into the fastnesses of the central plateau N. of the Vindhya and to the peninsula of Kithiwar, and there they set up small kingdoms most of which later became part of the great Mogul Empire. On the central plateau many of the smaller Rajput barons, however, became feudatories of the Muslim kingdom of Malwa. The resistance of the Rajput rulers preserved the culture, traditions, and religion of the Aryan age. Most of them have survived the storms of centuries and form the bulk of the Indian states of to-day, proving the vitality of the political system they embody (see Sir Wm. Burton, *The Princes of India*, 1934).

The rulers of Indian States have not necessarily any religious or tribal connection with the majority of their subjects, thus, the Nizam of Hyderabad is a Moslem, yet most of his subjects are Hindus. The salutes accorded the Princes indicated their relative importance. Princes with a salute of eleven guns and more were addressed as His Highness. Yet some well known Indians of title, such as H. H. the Aga Khan (q.v.) and the late Maharajah of Burdwan, are not ruling chiefs. The Chamber of Princes was established in Feb. 1921 as a permanent consultative body on matters affecting the States, generally, or both them and Brit. I., or the Empire as a whole. In 1947 it consisted of over 100 rulers of States who were members *de jure*, and twelve rulers elected by 127 other States. Arising out of the Montagu-Chelmsford reforms most of the States were in direct relations with the Gov. of I. In recent years the policy was pursued of promoting co-operation in such matters as justice, police, and public health. In 1943 an extensive scheme was launched for improving the administrations of hundreds of petty States in W. I. by attaching them to large neighbouring States such as Nawanganagar and Baroda.

**HISTORY**—In a country of the great pop. and the diversity of language and race such as I., not unnaturally history becomes a matter of some complexity and difficulty, and it is only with the widest movements that this sketch of the history of I. is concerned. Indian hist., for all practical purposes, begins with the first invasion of I. by the Aryans, who came from the N.W. and who lived for some time on the S. slopes of the Himalayas before they finally entered the great Indo-Gangetic plain and drove back the Dravidian pop. into the real peninsula to the S. These invaders had a settled system of civilisation and a fixed religious system. They were well acquainted with the various arts, and above all they brought with them the *Rig Veda*, the Hindu hymnal that establishes the antiquity of their origin (see also RELIGION above and INDIAN LITERATURE and ART, below). They formed states in the great plain, and they built great cities, the sites of many

of these remain down to the present day (e.g., Benares, Aryan Baranes). Their social system divided them definitely into four divisions, the Brahmins, or the priests, the Kshatriyas, or nobles, the Vaisiyas, almost the modern middle class, and the Sudras, or serf class, composed principally of non-Aryan peoples who were the slaves of their conquerors. Gradually the civilisation and the religion of this people became corrupted and about the year 600 B.C. there lived the great reformer Buddha (q.v.). At the same time occurred the rise of Jainism, a religion which was founded by Vardhamana Mahavira, and has often been regarded as an offshoot of Buddhism. But Buddhism never superseded entirely the older faith of the Hindu, the Brahminism which had been introduced with the coming of the Aryans and although for a time Buddhism appeared to have gained the upper hand, ultimately the original religion became the more prominent. It is with the invasion of Alexander the Great (q.v.) that the real history of I. with relation to the outside world may be said to begin. Alexander's campaign was confined, however, to the Punjab and to Sind, and although he made no definite settlement we know that he planted cities and left garrisons behind him. On his death I. passed to Seleucus, Chandragupta, Emperor of I. of the Indus was contemporary with Seleucus. The two Emperors made an alliance, and for a time the relations between the Gk. and the native kingdoms were well established.

As records grow more certain and continuous, the very full periods in which great Indian dynasties acquired power over a large part of I. Thus, there are the Maurya Empire (c. 321-184 B.C.) with Chandragupta and Asoka as its outstanding rulers and there is the Gupta Empire (c. A.D. 320-500) the golden age of Hindu culture. But none of these Empires extended over the whole of I., and beyond their borders princes and chieftains powerful and weak were in constant rivalry and strife. Our knowledge of the system of gov. of Chandragupta is due to the fact that the ambassador to his court by Seleucus, Megasthenes, wrote an account of the court, gov. and institutions of I. The grandson of this great king was Asoka, the champion of Buddhism. From the inscriptions and rock edicts which Asoka caused to be placed throughout his empire we learn that he ruled practically the whole of I. with the exception of the extreme S. of the peninsula. During his reign Buddhism became the predominant religion but after his death, the empire began to decay, and near the beginning of the second century B.C. the Mauryan dynasty came to an end. Two other dynasties may be here noticed, the Sungas and the Andhras, but of neither is very much definitely known. The Gk. provinces of I. had in the meantime become independent kingdoms under Gk. rulers, and in the middle of the second century B.C. the W. Punjab became for a time part of the Parthian empire.

In the middle of the second century

B.C., tribes from Central Asia began to invade I. The first of these was known as the Sakas, who estab. themselves W. of Kandahar, and gave to the country the name of Sakastan. Another was the Kushan, and in the first century A.D. the chief of this tribe estab. a great kingdom in the N.W. of I. The empire of the Kushans does not seem to have come to an end until the beginning of the fourth century of the Christian era, when the Gupta dynasty was estab., and almost immediately began to prosper. It was founded by a second Chandragupta, who extended his kingdom along the valley of the Ganges, and was increased by his son, Samudragupta, who conquered all the provs. of the Ganges, and estab. himself in Southern I. as well. Under Chandragupta II. fresh additions were made to the empire, but finally, about the year 480, the Huns from Central Asia broke up the empire and estab. themselves in Northern I. But at the beginning of the sixth century, the Huns were beaten by a Gupta king. The last native prince of Northern I. was Harsha, who ruled with a strong hand the whole of Northern I.

After the death of Harsha, the hist. of I. is a confusion of provinces and kings, whom it is impossible to mention in detail. But gradually in Northern I. the provinces began to find some shape and form under the gov. of the Rajputs, or members of the ruling families. At the end of the ninth century the most important kingdom was that of Panchala, whilst the Pala kings ruled in Bengal, and another important dynasty was that of the Chandel. Until the end of the third century the Andhra dynasty ruled the Deccan, and this was succeeded by that of the Chalukya Rajputs, which lasted until the beginning of the seventh century, and was then merged in the Chola dynasty. Early in the eighth century Arab armies conquered Sind.

The close of the tenth century witnessed the beginning of the incursions of the Muslims. The great Moslem empire originated in the setting up of two small independent Moslem states in the N. of I. The founders of both these states were originally slaves, and they were bitterly opposed by the Rajputs. In 987 the Sultan Mahmud of Ghazni ascended the throne of the Amir of Sabuktigin, and commenced a holy war against the infid. of I. In a great number of campaigns he gradually increased his power until it extended practically to the Deccan. Dynasty after dynasty settled themselves at Delhi, and gradually spread into the Deccan itself; amongst the Moslem states formed in the Deccan, the more important ones were Golconda and Nagapur. The beginning of the thirteenth century witnessed the incursion of the Mongol chieftain, Genghis Khan. The Mongol hordes, however, although they attained considerable power in the N.W., were, nevertheless, unsuccessful in their attempts to penetrate into I. itself, and these attempts were beaten back principally by the Moslems of Northern I. In 1398 came the great invasion from

Central Asia of Timur the Lame (usually spoken of as Tamerlane), who swept all opposition before him, and after perpetrating a fearful massacre before Delhi caused himself to be proclaimed emperor of I. Between 1000 and 1500 a succession of Afghan invaders drove right across Northern I. Moslem dynasties ruled at Delhi from the Punjab to Bengal; and the new conquerors pushed farther S. than any of their predecessors. Five separate Moslem Kingdoms were set up in the Deccan. Only S. of the riv. Cauvery was Hindu I. saved from the invader. Finally, from 1505 onwards, over the same N.W. passes, came the Moguls. At the beginning of the sixteenth century, however, appeared the greatest of all the conquerors of I. in the person of Baber. He was a Mongol descended from Timur and Genghis Khan. In the year 1526 he defeated the army of the Sultan Ibrahim in a battle fought to the N. of Delhi, and was proclaimed emperor of I. From this time dates the succession of Great Moguls who ruled, at least nominally, from the time of Baber until 1707. For a time Delhi alone remained in the hands of the conqueror, but gradually the whole of Northern I. was conquered. The greatest of all the Mogul emperors was Akbar the Great (1556-1605), to whom the whole of I. with the exception of the very S. owed allegiance. His legal code, the brilliance of his court, and the magnificence of the architecture of his reign are all worthy of note. Akbar was far more liberal in the matter of religion than the contemporary sovereigns of Europe; but for one reason or another multitudes of Indians, especially in the N., accepted their Moslem conquerors' creed; and so 'beneath the surface of unity the soul of I. was divided between two faiths or two philosophies of life, a gulf which seems to-day almost as deep as when it was first cut so long ago' (see H. Comland). The last of the great Mogul emperors was Aurangzêbe, who died in 1707 marking the final break-up of the Mogul empire, on whose ruins the Mahrattas formed an empire which was the greatest and most important in I. in the middle of the eighteenth century. On the break-up of the Mogul empire, the following practically independent states sprang into existence, that of the nabob of Oudh, the nizâm of Hyderabad, the nabob of the Carnatic, and Hyder Ali at Seringapatam. Little by little the provs. of the Mogul empire fell away from their allegiance. The Deccan became independent, Oudh followed suit, Bengal, Behar, and Orissa, though nominally still dependent, became to all intents and purposes independent. A general revolt of the provs. took place, and to make the confusion worse confounded, a foreign invader in the person of Nadir Shah, Shah of Persia, appeared in the land. The power of the Mahrattas had increased, and they were now the greatest power in I. The throne at Delhi was still occupied by descendants of the Mogul dynasty; but they were weaklings and were only nominal kings. The shah, having plundered Delhi, returned home to Persia, and

I. was again free of foreign invaders. Nevertheless, she was now but a conglomeration of independent states. The Punjab was annexed in 1761 by the Maharajas who were finally defeated by a coalition of the Muslim princes in I. who feared the growing power of the Hindus.

*The first European settlements and the power of the British in India.*—Europeans had for a long time known of the existence of the trade route to I. via the Red Sea, but the estab. of a Muslim power in Egypt had effectually closed that route to trade, and the result was that it had been necessary to seek some new way of approaching I. Towards the end of the fifteenth century many attempts were made to 'double the Cape,' and finally the task was accomplished by Vasco da Gama, who arrived by that route at Calicut in 1498. After this, the Portuguese made many settlements on the W. coast, the most important of all being Goa. But towards the end of the sixteenth century power in the E. began to pass into the hands of the Dutch. The Portuguese were driven from Ceylon, and the Dutch also estab. themselves firmly in the Malay Peninsula. The next great struggle which ensued was that between the Brit. E. India Company and the Dutch. The latter were finally driven out of I. altogether. England first appeared to claim a share in the spoils of the E. in 1600, when she obtained a charter for her E. India Company (q.v.), and her first factory was estab. at Surat in 1608. Trade, and trade alone was the E. India Company's objective; and trade, moreover, obtained by peaceful enterprise and agreement, not by force. The Company's first act was to send an envoy to the Mogul Emperor at Delhi to secure his permission to establish a trading-post on the coast. The envoy was followed by a full-scale ambas., Sir Thomas Roe (q.v.), whose title to fame is founded on his formulation of the Company's policy, which was, not to waste money on military adventures or in acquiring ter., but to 'seek profit at sea and in quiet trade.' (P. E. Roberts). In 1639 the site of Madras was bought, and in 1661 Bombay passed as the dowry of the queen of Charles II. into the hands of the Company. In 1690, after many failures, a settlement was made on the Hugli, which developed into the city of Calcutta.

The Fr. appeared in I. later than the Eng. A company with somewhat similar objects to that of the E. India Company was founded in 1664. Their most important settlement was at Pondicherry, which they retain even to the present day. Although, as will be shown, they made a great struggle for political power in I., they failed very largely because of the lack of interest of the home gov. By the time of the collapse of the Mogul Empire the E. India Company had acquired three prin. trading posts—at Madras, Bombay, and Calcutta; and, in order to protect these posts from pirates and from European rivals, forts were built and bodies of Indians known as 'sepoys,' enlisted and drilled under Brit. officers. The life

struggle for supremacy in I. between the Fr. and the Brit. commenced during the War of the Austrian Succession (1740-48). During this war the Fr. had been the more successful, and had, in fact, captured Madras. The treaty which ended the war, however, ordered the restoration of all conquests, and so Madras again passed into Brit. hands. With the outbreak of the Seven Years' war (1756-63) rivalry between France and England was renewed. A series of succession questions in the Deccan had given both a pretext for joining in the native quarrels, and now the attention of the Eng. commander, Clive, was called from the Deccan to the N. The succession of Surajah Dowla to the throne of Bengal had brought about the Black Hole of Calcutta, and Clive came N. with Watson to revenge the massacred Eng. The battle of Plassey (1757) ensued, and with the victory of the Brit. Company troops at that battle began the final supremacy of the Brit. in I. Three years later, at Wandowash, Sir Eyre Coote finally broke the power of the Fr. in the Deccan.

The throne of Bengal had passed into the hands of the nominees of the Brit. Company, and out of gratitude favour after favour was heaped upon them. But for a time the Brit. Company still regarded the victory which they had won as merely a means of definitely establishing a monopoly and not an empire. Clive, when he returned to I. in 1765, realised that it was possible to build up a great Brit. empire on the ruins of the fallen Mogul empire, but he advised against taking the risk which was necessary. The Company collected the revenues of Bengal, Behar, and Orissa, but as the vassals of the nominal emperor at Delhi. Clive during his administration pressed on many reforms which were necessary, but was sadly hampered by the fact that any reform which entailed a diminution of dividend was not popular with the board of directors who still ruled I. Finally, in 1767, he returned to England, and was later bitterly attacked. The House of Commons, however, recorded its appreciation of the services which he had rendered; but worn out by the attacks and by ill-health, he committed suicide in 1774. Clive may well be regarded as the founder of Brit. greatness in I., and had witnessed the Company become the sovereign of Bengal, Behar, and Orissa. In the meantime the Eng. had been left with a clear field in the rest of I. after the treaty of Paris (1763). The Portuguese, the Dutch, and now the Fr., had all disappeared as rivals to the power of England. Henceforth the Eng. could consolidate their power with little fear of interference from any of the European Powers. The Brit. power was threatened by Hyder Ali of Mysore, but the victory of Coote at Porto Novo again asserted the power of the Brit., which had seemed to fail at the end of the first Mysore war.

Between the years 1767 and 1773 the Brit. gov. of I. may be regarded as being in a state of flux. The first results of Brit. conquest in the eighteenth century

were deplorable because in England both politicians and commercial men had failed to grasp the significance of the conquest. Clive had realised all that was implied in the 'sovereignty' of Bengal, and in a letter to the elder Pitt had suggested that the Brit. Gov. should oust the company and shoulder the task. It took the Company some time to realise that it was a sovereign power, but finally, in 1772, it appointed Warren Hastings as governor of Bengal. There are points which are debatable in the career of Warren Hastings, but here it is necessary only to mention the events without discussing ethics. Hastings certainly reformed the revenue collecting system, estab. civil and criminal courts, and made large economies. He sold certain ter. to the nabobs of Oudh, but by so doing set up Oudh as a buffer state between the Brit. and the Mahrattas, and later, when he gave the nabobs of Oudh help in the Rohilla war, he did so because he realised that the Rohillas were a real menace to the Brit. In 1775 Lord North's Gov. passed the Regulating Act, which gave the home gov. certain powers over the officials of the E. India Company, and instituted a supreme court of justice and a council of w. Warren Hastings became the first governor-general, but for a time the hostility of his councillors prevented the operation of his schemes. During his period of power hardly any annexations had been made. Some ter. had been gained round Bombay, but on the whole he had been opposed to annexation, otherwise he would probably have annexed the ter. which he sold to the nabobs of Oudh.

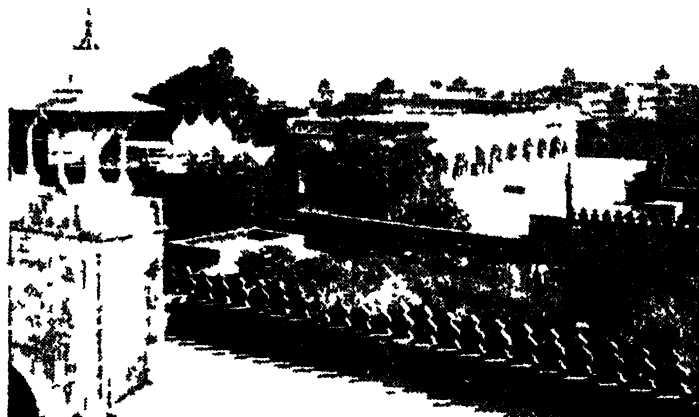
In 1784 Pitt's India Bill was passed, which created a council for I. on which certain of the directors and the board of control, nominated by the crown. The real power was now in the hands of the crown, although nominally it still remained with the Company, a state of affairs which existed until 1858. Lord Cornwallis both governor-general and commander-in-chief, had power of veto to an extent never employed by Warren Hastings. He busied himself at first with internal reform, and estab. a proper system of civil service for the servants of the Company. He was responsible in 1793 for the permanent settlement of Bengal, Behar, and Orissa; by this the assessment of the revenue was declared perpetual. Legal reform also occupied his attention. The attack by Tipoo Sahib on Travancore, however, necessitated the interference of Cornwallis, and the war ended by the cession of half of Mysore to the Company. The ter. acquired by the Company went to form the beginning of the Presidency of Madras. Cornwallis left I. in 1793, and was succeeded for a time by Sir John Shore, who, five years later, was succeeded by Lord Wellesley, probably the greatest of all the governors-general after Warren Hastings. In 1799 the fourth Mysore war broke out, undertaken by Wellesley with definite aims. It was short and in the course of it Tipoo Sahib was killed. Wellesley was an open advocate of a policy of annexation, and

by his system of setting up subsidised princes did much to extend the power of Britain throughout the whole peninsula. In 1803 the second Mahratta war broke out, and Gen. A. Wellesley (brother of the governor-general) won the battle of Assaye against overwhelming odds and practically broke the power of the Mahrattas. Almost at the same time Lake defeated another army and entered Delhi. The troops of Sindia were utterly defeated, and the prince accepted a subsidy from the hands of the Brit. The aggressive policy of Wellesley, however, led to his recall, and Cornwallis was sent out for a second term. But Wellesley had been instrumental in causing many reforms in I., in establishing a school for civil servants, and in bringing the finances of the country into a sound condition in spite of the expenses of his numerous campaigns. During the eighteenth century the power of the Sikhs had been increasing continually in the Punjab, and they now, under their leader, Ranjit Singh, put forward claims, that could not for one moment be admitted by the Brit., to ter. in the Punjab itself. A Brit. Army was sent against Ranjit Singh, but no fighting took place, the menace being sufficient. Under Lord Minto's governorship missions were despatched to Persia and Afghanistan to combat Fr. influence, whilst at the same time attacks were made on the Fr. colonies of Mauritius and Ile de Bourbon, the Dutch colonies in Java also being attacked and captured. The monopoly of the E. India Company was abolished in 1813, save so far as trade in the China seas was concerned. The period between the departure of Wellesley and the arrival of the Marquess of Hastings was one of stagnation. Hastings, however, reverted to the policy of his predecessor. During his governorship the Gurkhas were defeated and part of their ter. of Nepal was annexed; and the war against the Pindaris widened into a war with the Mahrattas, much of whose ter. in the neighbourhood of Poona was annexed.

Hastings left I. in 1823. Brit. supremacy over the native states was finally estab. and the whole peninsula of I. was ruled by the Brit. But an independent kingdom had been set up in Burma, Afghanistan had developed into a really strong state, and under Ranjit Singh the state of the Punjab had been unified and strengthened. Almost immediately there were clashes between Britain and these states. The Burmese war resulted in the loss of some ter. to the Brit. Afghanistan, regarded as an important buffer state between Russia and Brit. I., became for a time the centre of the storm. The Persians, influenced by the Russians, interfered there; the Brit., to protect their interests, were forced to intervene. They were at first successful, but a later Afghan rising drove them out of Afghanistan, and of the 4000 Brit. who left Kabul only one arrived safely at Jellalabad. An expedition was sent to Afghanistan to avenge this disaster; Kabul was stormed, the prisoners released, and the Brit. evacuated the country. In 1843, Sind (Sinde) was

annexed by Sir C. Napier, and the next war broke out on the death of Ranjit Singh, the lion of the Punjab. Two wars were fought with the Sikhs, the first in 1847, the second in 1848-49. The Sikhs of the Punjab were the most formidable enemies the Brit had yet met in I, but the victory at Gujrat (1849) delivered the Punjab to the Brit. In 1852 Lower Burma was annexed during the governor-generalship of Lord Dalhousie and in 1856 Oudh was also annexed. Nagpur and Gwalior also passed into the possession of the Brit about the same time. Between 1825 and the outbreak of the Mutiny many social reforms had

ridges were smeared with the fat of the cow and the pig, thus offending both Hindu and Moslem enraged the Indians. The Mutiny broke out on May 10 at Meerut and spread to Delhi. Within three weeks the whole Ganges basin was aflame, and at Delhi the representative of the royal line had again been proclaimed emperor of I. There were less than 10,000 Brit soldiers to hold in check a pop of well nigh 100,000,000. Cawnpore and Lucknow were besieged. The most horrible episode of the whole mutiny was the massacre at Cawnpore (July 1857). But Lawrence held the Punjab in check, a small Brit force advanced against Delhi. Havelock



THE TAJ, AGRA

(Canadian Pacific)

taken place under Brit. rule. The country had been developed, the education of the natives had been encouraged, canals had been developed, the telegraph and railways introduced, a system of cheap postage had also been instituted, and suttee had been abolished. This was a practice of Brahman women in which a widow committed suicide on her husband's funeral pyre. These reforms had been especially noticeable during the administration of Lord Dalhousie, and must be regarded as one of the causes of the outbreak of the Mutiny in 1857.

**Indian Mutiny.**—The Indian Mutiny may be traced to many causes. Inventions such as the telegraph were not understood by the native mind, and railway travelling upset the ideas of caste. Other causes were the distrust of the Brit. policy of annexation, and especially great were the military causes. The Sepoys believed themselves the essential part of the Brit. military power in I. The campaign in Afghanistan and the late Crimean war had shaken their faith in Brit. power, and above all a report that the new cart-

maged to the relief of Cawnpore with a small force, and Lucknow held out. In Sept. the tide turned at last. Delhi was stormed. Lucknow was reinforced by Havelock and Outram and was relieved by Campbell in Nov. although the city was not finally taken until the following year. In 1858 the Mutiny may be said to have ended, although the Central Provs. were not pacified until the following year. It was the saviour of the Bengal Army, recruited chiefly from high caste Hindus and from Moslems, who began the revolt and sustained it, and their main grievance was their belief that the ultimate intention of their Brit. rulers was to subvert their faith. It is true that the Mutiny was backed by mahonts in Oudh who had never forgotten or forgiven the annexation, but it is important to observe that the Mutiny was not a national rebellion against alien rule, and indeed some Sepoy regiments fought bravely beside the Brit., while the Sikhs made no attempt to recover their independence. On the great mass of the Indian pop., the country folk, the mutiny

had little effect outside the areas of disturbance (Sir R. Coupland). The chief results of the Mutiny were that the rule of the E. India Company came to an end, in 1877 Queen Victoria was proclaimed empress of I., and the governor-general was known henceforward as the viceroy.

*The Indian Empire established.*—After the Mutiny I. settled down to a period of peace broken only by the constant suspicion of Russian intrigue in Afghanistan. This led in 1878 to the second Afghan war. The Amir was deposed, and his successor promised to receive a Brit. resident, who was shortly afterwards murdered with his escort. This resulted in the famous march of Roberts from Kabul to Kandahar, and eventually an Amir who was favourable to the Brit. was installed. Quetta and the S.E. dists. of Afghanistan were annexed after this.

In 1885 Upper Burma was annexed as a result of the third Burmese war, and the Indian empire was practically completed. The 'Morley-Minto' constitutional reforms may be briefly noticed. These enlarged the legislative councils, accepted the elective prin. and gave Indians a direct share in administration by admitting an Indian member to the Executive Council in each of the provs. and at the centre. But if Lord Morley, then secretary of state for I., was the leading exponent of the Liberal tradition, he did not intend that these reforms should lead directly or indirectly to the estab. of a parl. system in I. Opinion in England was not favourable to democratic institutions for I. State-men and official-like recognised that majority rule was impossible for a country which was anything but homogeneous. But on the whole, after the Mutiny, Brit. statesmen were occupied in attempting to better the lot of the Indian pop. The plague, which used so frequently to occur has been combated, railways have been fully developed, and, above all, education has been much improved. Legislative councils were adopted for each prov., and the electoral system developed in the constitution of the Legislative Council of the Viceroy. After his coronation in 1911, George V. visited I. and held a Coronation Durbar at the beginning of 1912, this being the first visit of an King, sovereign to the Indian empire. At the Durbar the King-Emperor announced that Delhi would be the new cap. of I. Later Indian hist. is entirely political and concerned with the movement for Home Rule. For a time, the First World War put a stop to the movement; but the revolutionary spirit, which had sprung up in the last few years was only slumbering, and in Sept. 1911 there was rioting in Calcutta by Sikhs returning from abroad, and the Punjab was in a disturbed state till the end of 1911. There was also revolutionary activity in Bengal. After a two years' lull in politics the Home Rule movement was started again by Mrs. Besant and Tilak with fresh strength, and in Dec. the Congress and the Muslim League declared for it. In 1917 E. S. Montagu, secretary of state for I., arrived to discuss what steps should be

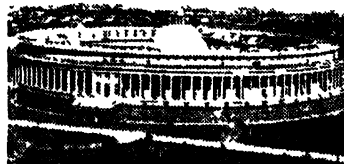
taken towards establishing a gov. responsible to the Indian peoples. In 1918 a report by the viceroy and the secretary of state was pub. proposing reforms in local self-gov., the administration of the Provs., the Central Gov., and the relations of the Native States. Appointments were to be made to all branches of the public service without distinction of race. These were indignantly rejected by the Home Rule leaders. After the Rowlatt Committee, appointed to consider methods of dealing with lawlessness, had reported in 1918, measures in accordance with their recommendations were passed in the Imperial Legislative Council in Feb. 1919 against the votes of the non-official Indian members. Outside the Council the opposition to them was widespread and highly organised; Gandhi (q.v.) inaugurated 'civil disobedience,' and a general *hartal* (stoppage of business) was planned for April 6. Throughout April there was rioting and loss of life. On the 13th at Amritsar about 379 persons were killed by the military. The events of April had a serious effect, and the delay by the Central Gov. (for good reasons) in holding an inquiry made the position still more difficult. In the summer a committee of the Lords and Commons in London had been considering the Gov. of India Bill, drawn up by Montagu, and made various recommendations. The Bill modified accordingly, was passed in Dec. 1919: dyarchy was abolished, the Council of State became a second chamber, the budget was to be voted by the Legislative Assembly, certain franchises (racial, etc.) were created, and a High Commissioner in London was appointed. Stress was laid on the intention that the Bill was not definitive, but only provided for a period of transition to a form of self-gov. The new constitution began working on Jan. 1, 1921, and on Jan. 10 the duke of Connaught landed in I. to inaugurate the new order. I. was being deeply stirred by an agitation which outwardly conformed to Gandhi's policy of non-violence: throughout 1921 there were outbreaks all over I. and crime generally increased. In March Gandhi started his home spinning campaign to oust all imported cloth. In the N. the Punjab was seething with unrest among the Sikhs owing to religious disputes; encouraged by congress propaganda, the new section among them known as the Akalis proclaimed the restoration of Sikh rule. In April 1921 Lord Reading became viceroy in succession to Lord Chelmsford, and the Rowlatt Acts were repealed. Attempts were made at an early stage in the new Imperial Legislative Assembly to amend the new constitution but the home Gov. refused to move. In March 1922 Gandhi was arrested, and sentenced to six years' imprisonment. In 1924 he was released on grounds of ill health, and more or less withdrew from politics till early in 1930, when he started once more a campaign against Brit. rule, picking out the salt monopoly as a special object of attack.

*Steps toward Self-government.*—In Feb. 1948 the Simon Commission arrived in I.

to study the whole constitutional question, and in the following year the Viceroy, Lord Irwin declared that dominion status was the aim of Brit. policy. The Commission had been called upon to report 'whether and to what extent it was desirable to establish in Brit. I. the principle of responsible gov., or to extend, modify, or restrict the degree of responsible government then existing.' It had been provided, when the original Brit. I. constitution was set up after the war, that it should be periodically revised; the Simon Commission whose report was pub. in 1930 represented the first of these revisions, and, in view of the disadvantages of such periodical overhauls, found itself at the very beginning forced to suggest that the original recommendation should be cancelled, in order that any scheme adopted should not seem to be only a temporary measure, and changes made only so far as time might show them to be needful. Dyarchy, with its fixing of certain functions in the prov. govs. which might not be exercised by Indian ministers, was recommended for abolition. As a whole, the future constitution of I. was to be federal in its essence, that is, there was to be a central federal assembly made up of members elected not by constituencies directly, but more indirectly by the prov. legislatures. Provision was to be made for consultation of All-India questions between Brit. I. and the Indian Native States; the police was to be under the administration in each prov. of a minister who would be part of the gov. as a whole, and share in its responsibility to the legislature. As to the protection of the minorities, the Commission proposed the continuation of separate representation for Moslems, for Sikhs, and for Europeans, and also for the depressed classes; and powers were to be reserved to the governor on behalf of the protection of minorities. Such were the main recommendations of the Simon Commission, which were put forward for public discussion.

The report of the Simon Commission marked the first stage of consultation and preparation, the second being the convening of three Round Table Conferences in London between 1930 and 1932. Prior to the first of those conferences the Brit. Gov. had issued a preliminary statement of its Indian policy which was approved by Parliament. After consideration of the Simon Report and the discussions of the Round Table Conferences, the gov. pub. its own proposals for Indian constitutional reform in a White Paper issued March, 1933. But there was still to follow a third stage of consultation, the White Paper proposals being submitted to a large joint committee of both Houses of Parliament. The Committee having consulted representatives of Brit. I. and of the Indian States, reported in Nov. 1931, with the result that the gov.'s proposals were altered. Then in Aug. 1935 came the second Act for the Gov. of I. This Act, unlike those which gave self-gov. to Canada, Australia, and S. Africa, was essentially an enactment of the Imperial Legislature and not of a dominion

parliament followed by formal enactment of the imperial parliament. Yet, considering the divergence of opinion in I., consultation followed by an imperial act was the only practicable method, particularly in view of Brit. responsibility for the minorities. But this stage had not been reached without incidents. For in Aug. 1934, Gandhi had set out from Poona to visit in the Kaira dist. to foment civil disobedience; but he was again arrested and imprisoned. He then concentrated his energies on the *Harizan*—'Men of God Movement,' aiming at communism on the Russian model; but he had by now lost much of his Hindu support. Terrorism, however, now arose in Bengal again, and there was trouble on



L.N.A.

NEW DELHI: GOVERNMENT BUILDINGS

the N.W. frontier with the 'Red Shirt' agitators and the gov. had to send up troops and guns to repel marauding Mohmands. In 1934 the Bengal Legislature passed anti-terrorist legislation by a large majority. Meanwhile the Home Rule (Swaraj) party had tried to make political cap. out of these disturbances, and adopted a resolution rejecting the constitutional proposals of the White Paper. It may be noted that the report of the joint parl. committee advocated the creation of an All India Federation composed of self-governing units in place of the existing centralised gov. It also proposed that the provs. should be given a greater share in the management of their own affairs. But it recommended that a number of important matters, such as customs and tariffs, should be subjects for the governor-general and his council. The Act of 1935 implemented practically all the recommendations of the joint committee. Put briefly, it provided for an All India Federation, Provincial Autonomy, and Responsible Gov. with safeguards at the centre.

#### *The Government of India Act, 1935.*

Like the constitution of 1919, that of 1935 falls into two parts: under the first, a full cabinet system was instituted in the provs.—now increased to eleven; while the second part of the Act was directed to the reconstitution of the central gov. But, in the interests of the general well-being, the prov. governors were given the right of exercising special responsibilities at all times to ensure peace and to protect minorities, and also to legislate by ordinance and pass acts in times of emergency.



The Act also extended the prov. franchise, but the property, service, and educational qualifications still remained, and communal electorates were still continued, notwithstanding the existence of a general electorate. This part of the Act came into operation in April, 1937 and worked well, particularly in Madras; but, in 1938, for reasons relative to the second part, the Congress Party instructed its members to resign their cabinet posts, a move which thwarted the general development of prov. responsible gov. The second part of the Act—which never came into operation—created a new federal state comprising both Brit. I. and the Indian states, with a bicameral legislature, the representatives in each House to be elected, mainly, by communal constituencies, but with the representatives of the smaller communities elected by an indirect method and those of the Indian states nominated by their rulers. The federal gov. was based on the system of dyarchy which had prevailed since the Act of 1919. Defence and external affairs were reserved subjects, to be dealt with by the governor-general and his council with ultimate responsibility to the Imperial Parliament. Other subjects were transferred to a Council of Ministers responsible to the federal legislature; but, just as in the case of the provs., the full cabinet system in the federation was modified by vesting limiting rights in the governor-general. Ordinarily the governor-general had special responsibilities for the maintenance of order, the protection of minorities, the security of federal finance, and the safety of the rights of Indian states; in special circumstances he might issue federal ordinances or even legislate by Federal Act. Legally, the inauguration of this federation depended on the execution of instruments of accession to the Federation by the Indian rulers in respect of their states. Morally, too, it would have been unworkable without the general agreement of Indian communities and parties. Heretofore the Indian princes seem to have been hesitant; the Moslems feared that their community would disappear in a federation; while the Congress Party challenged not only the machinery whereby the Act was made, but the entire constitutional system set up by it. The 'great problem in regard to the general government of India is the old but recurrent problem of achieving unity out of diversity—a unity consistent with the diversity engrained in India, and yet transcending and binding its elements together' (Prof. Ernest Barker). The problem could never be solved by merely asserting the majority principle, which would give the Hindus exclusive power—an exclusiveness inconsistent with the spirit of compromise inherent in true democracy. It has been suggested that one method of solution would have been to recognise religious communities as autonomous corporations in their own spheres, that is in matters concerning education or the religious life generally. Others suggested that instead of cabinet gov. the federal executive might be com-

posite in character and, like the Swiss form, recruited from the different parties and provs. But whatever method of solution were to be found and adopted, it had to be a solution by Indian agreement. That accomplished, the road might then lie clear to the vindication of the Brit. Gov.'s dictum that 'the natural issue of India's progress is the attainment of dominion status.' This consummation would materially strengthen the bonds of the Brit. Commonwealth of Nations, for through it, I. could influence and determine, for the better, the relations between E. and W., the two major divs. of mankind. It should, however, be pointed out that as long ago as 1917 I., while in form it may not have had dominion status, yet had even then much of its actual substance. For in that year an Imperial Conference had declared in favour of the recognition, not only of the dominions as autonomous nations of an imperial commonwealth, but also 'of India as an important portion of the same.' Already in 1917, I. had signed the treaty of Versailles and become an original member of the League of Nations, and by 1921 even had fiscal autonomy; and again, in 1932, I. was represented at the Imperial Economic Conference at Ottawa. Thus, I. had for years been steadily moving towards the goal of complete self-gov.

Prov. autonomy was in operation throughout Brit. I. by 1938, though its introduction was attended by serious difficulties, which were surmounted by the constructive efforts of the viceroy, Lord Linlithgow, and by the conciliatory part played by Gandhi in the settlement of differences which really concerned matters of procedure rather than fundamental questions of prin. Thus, a deadlock was avoided and the Congress Party accepted Ministerial office, some seven of the eleven provs. being administered by Congress Ministries by the end of 1938, while in all eleven provs. representative gov. was working far more smoothly and efficiently than had been anticipated. But responsible gov. with safeguards at the centre was still unattainable. The Central Gov. of I. remained the offspring of the Montagu-Chelmsford reforms as embodied in the earlier Gov. of I. Act of 1919. Both the Congress Party and the Indian Moslems were hostile towards Federation, although for different reasons. The Congress Party opposed the federation of democratic Brit. I. with states which were under more or less autocratic rule. Many of the leaders said that the democratisation of the states was an essential condition of their acceptance of Federation. The Moslems, on the other hand, were opposed to it because the accession of the Indian states, which are mostly Hindu, would give the Hindus an excessive influence at the centre, where they thought the Congress Party was already too strong. The leaders of the Congress Party resented the possibility that future members of the Federal Parliament might be no more than the mouthpieces of autocrats; and it must be admitted that the more recent hist. of some of the

Indian states gave some colour to their apprehensions. The Moslems resented the use of the Congress flag as a national flag; they opposed the singing in schools of a Hindu hymn which Congress regarded as a national hymn; they alleged ill treatment of Moslems in Congress governed provinces and they asserted that democracy in I had failed, since it implied, in the greater part of the country, that the majority party was primarily composed of Hindus and that the Moslems could never form an alternative gov in view of their numerical inferiority. It was for such reasons that they asked for representation in the Congress Cabinets, and it was for such reasons that the viceroy invited party leaders to collaborate in finding some agreement in the province as a preliminary step to constitutional advance at the centre. Faced in 1941 during the anxious days of the war by the continual refusal of the chief Indian political parties to co-operate with the gov save on their own mutually exclusive terms, Mr Amery, secretary of state for I, after consultation with Lord Linlithgow, decided to enlarge the Executive Council to meet increased pressure of work due to the war and to establish a National Defence Council to associate Indian non-official opinion as fully as possible with the prosecution of the war, and, shortly afterwards, representatives of the provinces and of the Indian states were appointed. The Brit Gov would naturally have preferred to leave the initiative to the elected representatives of the major Indian parties, but the attitude of the Congress party towards the Indian war effort—which indeed Gandhi did his utmost to obstruct—and the absorption of rival leaders in the pursuit of purely tactical advantages, made this impossible. While no constitutional change was involved in these appointments—constitutional changes were obviously impracticable in the midst of a life and death struggle—and the enlarged Executive Council was not to be responsible to the Legislature, the gov's decision represented a bold departure from tradition and its effect was to give the viceroy a War Cabinet containing a marked majority of Indian public men who were as representative of, and as responsive to, public opinion as was possible under existing conditions. Hindus and Moslems, Conservatives and Liberals being well balanced. The formation of the National Defence Council brought representatives of the most influential sections of the community into close collaboration with the Central and prov govs. It associated Brit I and the Indian States in the common task, and it provided that large body of moderate opinion which wanted to make the gov's war effort as national as possible with opportunities for co-operation on a nation wide scale.

The next notable step in the evolution of Indian constitutional history was the Cripps' Mission for the creation of a new Indian Union. Sir Stafford Cripps, a member of the War Cabinet, went to I, with the draft declaration of the Brit

Gov's proposals for a settlement of the Indian problem. The offer seemed so complete, flexible, and practical that its rejection by Congress came as a surprise even to those who had experienced the Congress mind. This offer contemplated I after the war as a self governing country under a constitution framed by an elected body of representative Indians by agreement among themselves, as a full fledged dominion within the Commonwealth, and as free as any dominion to secede from the Commonwealth and declare its independence. While the door was held open for all Brit provs and Indian governed states to join in the framing of the constitution, it was left open for those who could not accept the constitution framed by the majority to go their own way. Finally, during the critical interim of the war when responsibility for I's defence had perforce to be borne by Great Britain, leaders of the main parties were to be invited to be members of the viceroy's Executive Council, with whom would rest the task of organising the military, moral, and material resources of I for the victory on which her future freedom depended. The Cripps' offer suggested that immediately after the termination of hostilities, an elected body, representative of Brit I, and the Indian States, should be formed to frame a constitution and the Brit Gov undertook to accept any constitution so framed, subject to the right of dissentient provs to form separate Unions (and 650 April 1942). The Chamber of Princes were willing that their States should operate in every way compatible with their sovereignty and integrity in formulating a new constitution, but after brief negotiations the Brit proposals were rejected by all the Indian party leaders. After a further expansion of the governor general's Executive Council in July 1942, that body then consisted of fourteen members besides the viceroy and the commander in chief, and of these fourteen, eleven were Indians, while for the first time a Sikh and a representative of the depressed classes were included.

At this time presented a political paradox. For the outbreak of the Second World War strengthened the desire that I should be free. It both sharpened the eagerness of educated Indians to see their country, rid at last of all foreign control and whetted the impatience of the Brit people for I's liberation which should prove that their promises had been fulfilled and bear witness to a sceptical world that the imperialism of a bygone age was dead. I's share in the war was great and it was still growing at this time, but to the accompaniment of regret in Britain that the largest and most powerful political organisation in I had not only taken no part in I's valuable contribution to the Commonwealth's war effort (a statement on Indian casualties in the war up to March 1945 put the total on all fronts at 179,759), but on the contrary had been led stage by stage under Gandhi's obsession of pacifism to seek to impede it by 'open rebellion' in pursuance of the

demand for Brit. abdication. The Congress Party in fact revolved (at a meeting of the All-I. Working Committee on July 11) to sanction the starting of a mass struggle on non-violent lines on the widest possible scale, unless its demand for immediate transfer of power were not conceded. (Gandhi, Pandit Nehru (*q.v.*), Maulana Azad, and members of the Working Committee were arrested, and the All-I Congress Committee and the prov. committees declared illegal. In the disorders which ensued on the arrests some 600 persons were killed. Gandhi, in Feb. 1943, then sought by fasting to secure his unconditional release and three members of the Executive Council resigned on the ground that they could not share responsibility for the gov.'s refusal to yield to Gandhi's demand. The pub. correspondence between the viceroy and Gandhi shows that the gov. held Congress and its leaders responsible for the deplorable acts of sabotage and terrorism which had supervened on the Congress revolution of Aug. 1912 (on these disturbances see Cmd. 6130 of 1913).

Grave famine conditions prevailed in 1913 in parts of Bengal; but energetic measures adopted by the new viceroy, Field-Marshal Lord Wavell (who succeeded Lord Linlithgow in Oct. 1913), mitigated its effects, though the number of dead from starvation and disease was nearly 700,000 (see under **BENGAL**). In April 1914 some 500 persons were killed in explosions in Bombay docks and 2000 were injured; but whether the explosions were caused by sabotage or not was not stated.

The Brit. Gov. made a statement of policy on I. in both Houses of Parliament on June 11, 1915. The main proposal, which was without prejudice to the final constitutional settlement, was that the members of the viceroy's Executive Council should in future be chosen from among leaders of Indian political life at the centre and in the provs. Meanwhile the Cripps offer remained open to I., the gov. hoping, though on no strong grounds, that Indian political leaders might reach agreement on the procedure by which I.'s permanent form of gov. could be formulated. In the vain hope of ending the deadlock the gov. stated that, provided the party leaders were prepared to co-operate in the successful conclusion of war against Japan, they were prepared to agree to important changes in the composition of the viceroy's Executive Council. It was proposed that the Executive Council should be reconstituted and that the viceroy should make his selection from among leaders of Indian political life in proportions which would give a balanced representation of the main communities, including equal proportions of Moslems and Caste Hindus. The members of the Council would therefore be Indians, with the sole exception of the viceroy and commander-in-chief—an essential proviso so long as the defence of I. remained a Brit. liability. If co-operation in this policy could be achieved at the centre it would no doubt be re-

asserted in the provs. where, owing to the withdrawal of the majority party from participation, it became necessary to put into force the powers of the governors under the Act of 1935 (section 93). Nothing, however, contained in any of these new proposals affected the relations of the Crown with the Indian states through the viceroy's (Crown representative (Cmd. 6652 of 1915). The above proposals owed everything to the initiative of Lord Wavell, who convened a political conference at Simla to take counsel with him on the proposals for a new Executive Council. The conference agreed that the Council should be reconstituted, but could not agree on the question how it should be constituted in terms of parties and communities. After consultations in London Lord Wavell on return to I., announced the gov.'s intention to convene a constitution-making body, and as a preliminary step he would, immediately after the elections, undertake discussions with representatives of prov. Legislative Assemblies to ascertain whether the Cripps proposals were acceptable. But pending the elections the schism between the Hindus and Moslems became more emphasised than ever. The Congress Party, through Nehru, made it clear that it would stand out for immediate transfer of power. Jinnah (*q.v.*), leader of the Muslim League, merely reiterated his demand for separation and re-defined Pakistan (*q.v.*) as including the existing provs. of the Punjab, N.W. Frontier Provs., Sind, Bengal, Assam, and Baluchistan. As a result of the general elections the composition of the Central Legislative Assembly was: Congress, 57, Muslim League, 30, Independents, 3, Sikhs, 2, Europeans, 2.

The change of gov. in Britain, however, was soon to introduce a change of method in not of policy towards the Indian problem. The Attlee Labour Gov. concurred in the Churchill Coalition Gov.'s policy that Indians should themselves form a new constitution for a fully autonomous I., but they pursued a different course in the hope of accelerating that process. Early in 1948 the gov. sent to I. a Cabinet Mission consisting of Lord Pethick Lawrence (Secretary of State for I.), Sir Stafford Cripps (President of the Board of Trade) and A. V. Alexander (Minister of Defence) to co-operate with the viceroy in preparations for setting up a constitution-making body and for creating an Executive Council at the Centre having the support of the chief Indian bodies. When after some three months' negotiation it became evident that, without some initiative from the mission, agreement would not be reached, the Cabinet Mission themselves put forward proposals to the effect that the constitution should be settled by a Constituent Assembly composed of representatives of all communities and interests in Brit. I. and of the Indian states. Their plan contemplated the immediate setting up of an interim gov. in which all the portfolios including that of war would be held by Indians, and that after the gov. had assumed office

the constitution-making body would be assembled. The White Paper (Cmd. 5821 of 1946) on these proposals opened by repeating the hope that the Indian people would elect to remain in the Brit. Commonwealth but that if I. elected for independence, in the view of the Brit. Gov. she had the right to do so. The Cabinet Mission admitted that if there were to be peace in I. it must be secured by measures assuring to the Moslems a control in all matters vital to their culture, religion, and economic interests; but on the basis of census statistics they concluded that neither a larger nor a smaller sovereign State of Pakistan would provide an acceptable solution for the communal problem. Apart from the force of arguments against the inclusion of necessarily considerable non-Muslim minorities there were also weighty administrative, economic, and military considerations, which presupposed a united I. A partitioned I. would result in dislocation of arrangements for defence and communications besides complicating the position of the Indian states. The Mission was therefore unable to advise the gov. that their powers should be handed over to two entirely separate sovereign states. They suggested, however, that the permitted grouping of provs. with executive and legislative bodies would enable the Moslem areas to legislate in common. The Mission recommended that the Indian Constitution should take the following basic form: (i.) There should be a Union of I., embracing both Brit. I. and the states, which should deal with foreign affairs, defence, and communications, and should be empowered to raise the finances required for these subjects; (ii.) the Union should have an executive and a legislature constituted from Brit. Indian and states representatives. Any question raising a major communal issue in the Legislature should require for its decision a majority of representatives present and voting of each of the two major communities as well as a majority of all the members present and voting; (iii.) all subjects other than Union subjects and all residuary powers should vest in the provs.; (iv.) the states should retain all subjects and powers other than those ceded to the Union; (v.) provs. should be free to form groups with executives and legislatures; (vi.) a majority vote of the Legislative Assembly of any prov. could call for a reconsideration of the terms of the constitution after an initial period of ten years. In the relationship of the Indian states to Brit. I. the White Paper stated that with the attainment of independence by Brit. I., paramountcy could neither be retained by the Brit. Crown nor transferred to the new gov. of I. Following the pub. of the mission's plan communal controversy centred on such issues as parity, grouping, and the sovereign rights of the Constituent Assembly, and eventually the Mission and the viceroy proposed that a body consisting of five members of the Muslim League, six members of the Congress Party, and one each of the Sikh, Parsi, and Indian Christian minority

communities should form an interim gov. Later it was stated that until a new interim coalition gov. was formed a 'caretaker government' of officials would be set up and that elections to the Constituent Assembly would take place as soon as possible. The elections to 385 seats, held in July, resulted as follows: Congress, 205; Muslim League, 73; Independent General, 9; Unionists, 3; Independent Muslims, 3. But as the Muslim League, on July 27, revoked its previous acceptance of the Cabinet Mission's scheme, the duty devolved on the viceroy to try to form an interim gov. The Congress Party's nominees assumed office on Sept. 2. Subsequently agreement between the viceroy and Jinnah led to the inclusion on Oct. 26 of five nominees of the Muslim League. Disorders were frequent during these events. Muslim 'direct action day' observed on Aug. 16 was marked by riots in which 5000 persons were killed and many more injured. Later in the year pseudo-nationalist outrages by thugs led to heavy loss of lives and widespread destruction of property in Bihar, Bombay, and E. Bengal.

The Constituent Assembly, owing to differences among Indian Parties, did not function in the manner intended by the Mission's plan. In yet another statement of policy (Cmd. 7017 of 1947) the Brit. Labour Gov. repeated that they desired to hand over their responsibilities to authorities estab. by a constitution approved by all parties in I., but that there was no prospect that such a constitution and such authorities would emerge; and then followed the startling intimation that the gov. definitely intended to take the necessary steps to effect the transference of power into responsible Indian hands by a date not later than June 1948. Assuming by then that a constitution had not been worked out by a fully representative Assembly the gov. would have to consider to whom the powers of the Central Government in British India should be handed over on the due date, whether as a whole to some form of central Government for British India, or in some areas to the existing provincial Governments, or in such other way as may seem most reasonable and in the best interests of the Indian people. The gov. however, intended to put in hand, without delay, preparatory measures for the transference and, while admitting that the efficiency of the civil administration must be maintained and the defence of I. be fully provided for, realised that as the process of transfer proceeded it would become more difficult to carry out all the provisions of the Gov. Act, 1935.

In the Commons (March 1947) in the debate on I., Winston Churchill, leader of the Opposition, said he stood by the principles of the Cripps' mission declaration of 1942, which bound both sides of the House, and he charged the Labour Gov. with departing from the terms of the declaration. He said that by their time-limit they had put an end to all prospect of Indian unity. Sir John Anderson (q.v.) pointed out that unless there was

agreement among the Indian parties the Gov. would hand over to an indeterminate number of authorities, and he thought that the gov. had dismissed very lightly the pledges which Britain gave in respect of minorities and especially of the depressed classes. The Conservative Opposition in fact considered that the gov.'s policy instead of standing out as a great act of magnanimity and self abnegation would go down to hist as a surrender and a betrayal.

*The Indian Independence Act, 1947* — In the discussions of 1946-47 it proved impossible to obtain agreement either on the cabinet mission plan or on any other plan that would preserve the century old unity of I. Coercion being outside practical politics, the only alternative was partition. A political settlement along the lines of Pakistan afforded, at this time, the only practicable alternative to civil war, but the Brit. proposals expressly left the way open to negotiation between the communities for an Indian Union of the kind foreshadowed in the cabinet mission's plan. No agreement other than by partition having proved acceptable, a plan as evolved by Viscount Mountbatten and agreed to by Indian political leaders. This plan involved a decision of the two Indian parties as to whether there should be a partition and if partition was decided, then two Constitutional Assemblies would determine the future constitution of each of these divs. In these circumstances the Prime Minister on June 3, 1947 announced in the House of Commons that the gov. proposed to introduce legislation at once for the transfer of power that year on a basis of dominion status (*q.v.*) to one or two successor authorities—thereby leaving it to Indians themselves to decide whether or not there should be partition. The majority of the representatives of the provs. of Madras, Bombay, the United Provs., Bihar, Central Provs., Benar, Assam, Orissa, and the N.-W. Frontier Prov. and the representatives of Delhi, Ajmer-Merwara and Coorg had, by this time, made progress in evolving a new constitution as invited to do in the cabinet mission's plan. On the other hand, the Muslim League Party, including in it a majority of the representatives of Bengal, the Punjab, and Sind, as also the representative of Brit. Baluchistan, had decided not to participate in the Constituent Assembly. The procedure provided for in the Brit. plan was therefore designed to enable the peoples of I to decide, and to decide quickly, whether the Brit. were to hand over power to one or to two govts., and further, to determine, subject to the future rectification of frontiers by a boundary commission, the areas of Brit. I within which the two govts., if the Indian peoples wanted partition, should rule. The plan of procedure also provided for a transitional period of dominion status for the Indian Gov. or govts. without prejudice to their ultimate right to regulate their own relations with the Brit. Commonwealth and the world at large. This procedure, therefore, antici-

pated the transfer of power which was projected for 1948; for it enabled a beginning to be made at once with the transfer of effective power to Indian hands by calling into existence a succession gov. or govts. well before even the end of 1947. The sequel to the announcement of this new procedure was the introduction in the House of Commons on July 4, 1947, of the Indian Independence Bill, providing for the estab. of the two independent dominions of I. (not Hindostan) and Pakistan on the succeeding Aug. 15. The Bill gave extensive transitional powers to the viceroy and governor-general to make orders for dividing between the new dominions the powers of the governor-general in Council and for the div. of the Indian armed forces. Thus was surmounted the difficulty of finding a method of effecting the transfer of power without waiting for the completion of the process, almost certainly lengthy, by which the peoples of I must finally shape their own constitutional arrangements. The Bill also provided for the appointment of boundary commissions for Bengal and the Punjab. Each dominion was to have its own governor-general; but, pending their decision, there was one governor-general for both. Full legislative authority in each dominion was vested in its Constituent Assembly, which was, consequently, empowered to create its own cabinet. The Bill did not and could not legislate directly for the Indian states, but it laid down in terms the right of the states to accede to either of the new dominions—an important declaration in view of the political pressure to which the states were being subjected by the Congress Party. But the Bill also provided that from Aug. 15 the suzerainty of the Crown over the states would lapse and all power and authority exercisable by the Crown in relation to them come to an end. By its nature the peculiar relation of paramountcy which for so great a period had linked the states to the Crown could not be transferred to any succession gov. It was essential, indeed, that the states should be given time to adapt themselves to the new régime, and that was the intention of the Bill in so far as the states came within its scope. The Indian Independence Act received the Royal Assent on July 18, 1947. Lord Mountbatten who succeeded Lord Wavell as last of the viceroys, was accepted by the Congress Party as governor-general of the dominion of I and Mr. Jinnah (*q.v.*) as governor-general of Pakistan.

On Aug. 8, 1947, Delhi and Karachi became the caps of I and Pakistan respectively. Mohammed Ali Jinnah (*q.v.*) was elected president of the Pakistan Constituent Assembly (Aug. 11). Constitutionally the two new dominions came into existence at midnight of Aug. 14, 1947. Jinnah was sworn in as governor-general of Pakistan and Earl Mountbatten as governor-general of I (Aug. 15). Two days later the Boundary Commission's findings on the partition of Bengal and the Punjab were announced, Calcutta being given to I and Lahore to Pakistan.

The partition scheme allotted 83,775 sq m with an estimated pop of 6,470,000 to W Punjab and 35,314 sq m with a pop of 11,547,900 to E Punjab. Rioting on a wide spread scale then broke out in the Punjab and a mass movement from the riot affected areas of the Punjab began. Serious disorders in the Punjab and Quidia led to the evacuation of threatened minorities. After the premiers of the two dominions had conferred at Lahore (Sept 4) on measures to be taken in this grave emergency, violence in the Punjab declined and on Sept 20 they issued a statement declaring their agreement on the necessity to co-operate in establishing peaceful conditions and their intention to remove causes of conflict. When the disorders in the Punjab reached an uneasy lull in early Oct many thousands of persons had been killed. The lull was broken by frequent minor riots in outlying towns and villages and by sporadic raids by armed gangs on trains and road convoys on both sides of the Punjab border. Nor did Delhi escape the bitterness of communal hate and there whole streets in the Muslim quarters lay deserted and looted, while their former inhabitants either on the move by road or rail to W Punjab or were herded in abject misery and fear into refugee camps. Ultimately some six million Muslim refugees were transferred from E to Pakistan as a result of the Punjab disorders and five million Hindus and Sikhs from Pakistan to India (for details of the Punjab disorders see PUNJAB History). There was also tension in Kashmir State which developed into armed rebellion (Oct 22) by Muslim peasantry against their Hindu maharajah in favour of Pakistan. Kashmir however acceded to the Indian Union (Oct 27) and a new interim gov was formed soon afterwards. Rebel forces advanced on the cap but were driven back. On Nov 9 Indian troops occupied the State of Junagadh (one of the States of the former Western I States Agency) which had previously acceded to Pakistan; the gov of which lodged a strong protest against this action. It was on this date (Nov 9) that the Constituent Assembly of I met for the first time as the Parliament of the dominion. A month later it was announced in this parliament that agreement had been reached in negotiations between I and Pakistan on all outstanding issues relating to partition. This agreement however, did not relate to the Indian states particularly Kashmir and Hyderabad. Under pressure by the Indian Gov the Muslim Nizam of Hyderabad agreed to reform his executive council though as the sequel was to show this was far from ending his difficulties. On Dec 19, Earl Mountbatten took the salute at New Delhi at the farewell parade of the last Brit troops to leave the cap. Five days later fierce fighting occurred between Indian troops and insurgents in Kashmir on the Jammu front, and a week later Pandit Nehru referred the Kashmir dispute to the United Nations Security Council (for details see under KASHMIR). On Jan 13,

1949 Gandhi began a new fast in the cause of Hindu-Muslim unity but after assurances that leaders of all communities would carry out his conditions for restoring communal harmony he broke his day fast. While he was addressing a prayer meeting at Delhi (Jan 20) a bomb exploded in the vicinity but without damage. Ten days later he was shot by a Hindu fanatic while on his way to an evening prayer meeting at Delhi and died half an hour later (see GANDHI). On



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GANDHI ADDRESSING A PRAYER MEETING  
JANUARY 1948

This photograph was taken shortly before his assassination.

Feb 21 Junagadh where there had been considerable unrest, voted for accession to the Indian Union by a huge majority. A week later the last Brit troops in E left Bombay (Feb 29). On Earl Mountbatten relinquishing office Sir Chakravarty Rajagopalachari was appointed governor general of I. This was not the only change in the two governor generalships for later in the year Jinnah died of heart failure and was succeeded by Khwaja Nazimuddin. Chief interest in the hist of the subcontinent now centred on the Indian State, especially Hyderabad and Kashmir. In Sept Indian troops invaded Hyderabad, and four days later the Nizam's army formally surrendered (see further under HYDERABAD). Greater difficulties were experienced on both sides in Kashmir and eventually, following an armistice early in 1949, it was agreed to refer a United Nations Commission to arrange a plebiscite. This Commission reported in June 1949, Adm Nimitz being accepted by both sides as chairman of the Commission.

THE END OF INDIAN INDEPENDENCE ON THE INDIAN STATES.—The most striking aspect of the changing face of I during the years immediately following independence was the integration in the new national polity of many once powerful princely states. During that period of swift changes the 550 principalities, large and small, which fell within the sphere of

the dominion of I., found themselves reduced to seven groups of 'unions' and a score of units. The latter were confined to the largest states, at first usually held to justify their separate existence where their pop. was at least 1,000,000. But this criterion of viability was soon abandoned and most of the remaining units were either grouped with neighbouring states or merged in adjacent provs. The princes themselves have mostly become political pensioners still enjoying some personal privileges but with much reduced privy purses. Two main factors contributed to this process of integration: the influence of Indian nationalism within the states and the determination of the States Ministry at Delhi to remove any possible challenge by disaffected princes (see HYDERABAD). Travancore (pop. 6,000,000) and Cochin (1,250,000) still retained their identity in 1949, but may later be united to a new Kerala prov. of Malayalam-speaking people including adjacent dists. of Madras, Mysore (7,000,000) too, having reached a compromise over popular rule, also remains a separate political unit; but if Madras Prov. should be partitioned into its linguistic components, Mysore might eventually be merged in Tamil-Nad (as distinct from the Telugu-speaking part of Madras). Some fifteen of the former Deccan states, and the states of Kolhapur and Baroda were merged with Bombay. Hyderabad, too, retains a precarious identity, but if Nationalist agitation for partition should prevail, its E. half would probably be assigned to the Andhra-Desh or Telugu-speaking part of Madras and its N.W. areas would join the Marathi-speaking areas of Bombay and the Central Provs. to form a new prov. of Maharashtra. The half-dozen Gujarati states, merged with Bombay Prov. early in 1948, have mostly lost their separate identities. A group of minor states, formerly under the Chhatishgarh and Orissa Agencies, were merged early in 1948 into the adjacent Central Provs. and Orissa and have vanished from the map of I. Kutch in Western I. and Chambha and Bilaspur in the Himachalan foothills are directly administered by the Union Gov. of I. Rampur and Benares (in the United Provs.) and Cooh Bihar, Tripura, and Manipur (in Assam) still retain their identity, but will probably be absorbed. The status of Kashmir, which is in dispute between I. and Pak-istan, will eventually be decided by a plebiscite under the auspices of the United Nations (see KASHMIR). The seven groups or unions are: (1) Saurashtra, a combination of 280 states and estates in Kathiawar; (2) Madhya-Bharat, the official style of a union of twenty-eight of the twenty-nine Malwa states, the largest of which is Gwalior (3,000,000). This union, like that of Saurashtra, has achieved a degree of stability, but there is conflict over Bhopal, the twenty-ninth Malwa state, between the Central Provs. and Madhya-Bharat, both agitating for its absorption into their territory; (3) Vindhya-Pradesh, a union of thirty-four Bundelkhand and

Baghelkhand states, and the most backward and undeveloped part of I. In default of some capacity for self-gov. the union may be merged into the adjacent United Provs.; (4) Rajasthan, the biggest of all the unions. Its membership of ten Rajputana states, headed by Udaipur, was expanded in 1919 to include four important Rajput states hitherto regarded as 'viable units'—Bikanr, Jaipur, Jaisalmer, and Jodhpur—and thereby became the greatest administrative unit in I. with an area of 121,000 sq. m. and a pop. of 12,000,000—a notable achievement of the States Ministry; (5) Matsya (E. of Rajasthan) whose future status is under consideration. Probably Alwar, one of the states of the union, will join Rajasthan, while Bharatpur and Dholpur states will merge with the United Provs.; (6) five Sikh states of the E. Punjab, headed by Patiala (pop. 2,000,000); and (7) Himachal Pradesh, also in the E. Punjab and formed out of ten small hill states, differing from other unions in that it is directly administered from Delhi. All these changes have contributed to the unification of I. However arbitrary the methods used, realism demands the admission that the continuance of the states as strongholds of a picturesque mediaeval feudalism and despotism had become an anachronism which could not long have resisted the democratic forces germinating throughout I. It is evident that the states must conform to the pattern of political progress in the rest of I. and already they have been short of much of their former splendour. Courts, banquets, processions, and lavish hospitality must be adjusted to restricted privy purses. The princes are now either servants of the people or absentee aristocrats. Some, however, have been recruited into the foreign service. The states unions at first acceded on three subjects only—defence, foreign relations, and communications, but are rapidly aligning themselves with the provs. in their polity, and in 1949 the Rajpramukhs (comparable to prov. governors) of all unions signed fresh instruments of accession conceding to Delhi legislative powers in respect of all subjects which the provs. themselves conceded to the Central Gov.

INDIAN LITERATURE.—The greater part of the literature dating from 1000 B.C. is of religious inspiration, and each religious sect possesses its own sacred books. The most important of these are the *Veda* (v.c.) of the Brahmins and the *Tipitaka* of the Buddhists. Then there are also the heroic songs, the fairy tales, and the myths, together with a vast amount of gnomic poetry which is very perfectly executed. Scientific work in I. has never been divorced from literature proper, and verse has been the medium not only for biography and hist., but also for treatises on medicine, architecture, astronomy, philosophy, and law. Its languages belong to at least three main linguistic families; and besides the Indo-European languages, of which the Indo-Aryan is the most complicated branch, there are Dravidian and



Indian State kaivasya  
'TOILET SCENE' A P. F. N. C. O.  
AT AJANTA

Kolarian languages (see further under INDO-EUROPEAN LANGUAGES). The Veda is one of the oldest and most important of the literary works belonging to the Indo-European languages. It is not a series of books, like the Heb. Bible, but a great literature which grew during the centuries, and for many generations was handed down verbally. The Vedic literature is now separated into four classes—*Samhitas* or collections of hymns, *Brahmanas*, prose texts, *Upanishads*, forest-texts, and *Panishads*, secret doctrines. The *Samhitas* may again be divided into four divisions, and it is because of these divisions that the Vedic literature is sometimes spoken of as *Vedas* instead of *Veda*. The *Kalpavallu*, manuals of ritual, also form a literature closely allied to the Veda, but as it is not considered to be of divine revelation it is not included in the Vedic literature proper. The first traces of epic poetry are to be found in the *Veda*, but later a whole heroic literature grew up sung by the sutas or bards at various festivals. These epics and ballads have been collected into two great epic works which are rather complete literatures in themselves than single poems. The first of these, the *Mahabharata* (q.v.), is the narrative of the battle of Bharatas, and the author is traditionally supposed to be an ancient mythical seer, Vyasa, who is also supposed to have compiled the Veda and the heroic poems, *Puranas* (q.v.). The second of the two epics, the *Ramayana* (q.v.) is probably the work of a poet, named Valmiki, who, as far as it is known, lived in the third

century B.C.; but much of the *Ramayana* seems to have been added at a later date. There is more unity, however, in the *Ramayana* than in the *Mahabharata*, but which of the two is the older it is difficult to determine because neither may be in its original form. The *Ramayana* may be considered the epic of Eastern India and the *Mahabharata* of Western India. The *Puranas* are 'old narratives', and their date is uncertain, but they belong to a later Indian religion, Hinduism. There are eighteen 'Great *Puranas*' and several lesser ones. The date of the *Lipitaka*, the religious literature of the Buddhists, seems to be between the fourth and third centuries B.C. See also HINDUISTAN LANGUAGE AND LITERATURE.

INDIAN ART.—The earliest known art of India is that of the Indus valley culture (q.v.), dating from about 2500 B.C. and having affinities with the Sumerian art of Mesopotamia. The Indus culture was succeeded after an unknown interval of time by the Aryan culture which again centred in the Indus valley and dates perhaps from 1000 B.C. or earlier. This age is known from the Vedas, but none of the buildings or sculpture of the time has survived. The first period from which dates a continuous knowledge of Indian art comes much later. It possesses a distinctive Indian character. During the reigns of Chandragupta Maurya (322–298 B.C.) and of his grandson Asoka (273–232 B.C.), in particular, it is known that sculpture and architecture, the arts in which India has made its greatest contribution to the world, flourished. Persian influence had been in existence since about 800 B.C., and was particularly evident during the Mauryan period. The commemorative pillars erected by Asoka may have been Persian in origin. Asoka being a devout Buddhist also built a number of burial mounds enshrining Buddhist relics. The greatest of these was the great *Stupa* or burial mound at Sanchi in Bhupal. Among smaller works a number of interesting portrait heads in sandstone and groups of figures in terracotta have survived. Early Indian art is realistic, serious, pantheistic, seldom idealistic. The tradition continued during the post-Maury periods—the Sunga and Kanva dynasties from about 200 B.C. up to A.D. 20. Literary evidences show that painting was also practised, mainly as mural decoration. Some of the paintings in the famous Ajanta Caves in the dist. of Khandesh in the Deccan (Hyderabad) belong to this early period. The Ajanta frescoes were painted over a period from 200 B.C. to the seventh century A.D. They depict realistic scenes from Buddhist life, and parables from the Buddhist religion, and as compositions are among the great works of art of the world. Long subtle curves, bold and vigorous lines, and uniform thickness of line are the chief features. Water-colour, and ingredients made of coloured stone, clay, and silicates, were used. Greek and early Christian influences made themselves felt as a result of the trade carried on in the empire established by the Kushan kings, particularly Kanishka (120–162).



From this time date the early sculptured figures of Buddha which have become so well recognised a feature of Indian art. The Kushan empire was succeeded in Northern I by the Gupta dynasty when Chandragupta I came to the throne in A.D. 320. The dynasty survived for nearly 300 years when it was finally over come by the invasion of the Huns as a result of which few examples of the art of the period have survived. Enough is known however to show the excellence to which the art of sculpture attained especially in the scenes depicted on the walls of temples. The Gupta period is in fact reckoned as the great age of Indian sculpture. The style is less heavy than that of earlier years and is richly decorative. It was the Gupta artists who evolved the most perfect forms of the Buddhist and Brahman divinities. The temples were built structurally, and not as enclosures, with short pillars crowned by heavy square capitals. Greek influences were by now completely absorbed. Metal casting was carried out with enhanced excellence, a remarkable example being the colossal statue of Buddha from Sultanpury of the fifth century now in the Birmingham museum. In Southern I, in the Deccan a style of flat roofed architecture with horse shoe arches and decorative columns was developed. The stability given to the country by the Andhra dynasty which lasted from 225 B.C. to the third century A.D. allowed continuous development. This dynasty and its successors, the Chalukyas, are remembered for its elaborate temples hewn from the rock. Southern Indian architecture achieved its greatest success under the Pallava dynasty (fourth to eighth century) and the Cholas (tenth to thirteenth century) to whom belong some of the finest examples of bronze casting. A distinctive feature of Dravidian architecture under the Cholas was the pyramid shaped tower surmounted by a stone monument. In the great temple at Tanjore the tower of this description rises to a height of 190 ft. Some of the glories of Gupta art were revived in Northern I during the reign of Harsha. With the death of Harsha in A.D. 647 the history of art in the N shifts to the kingdom which was founded in Bengal by the Pala dynasty in A.D. 750 and lasted until the Muslim invasions of the twelfth century. Much intricate and carefully wrought metal work belongs to this period. The sculpture, notably Buddhist figures in black slate, approximates to metal work and lacks the sensuous modelling of earlier periods. Artists whose names are known through the writings of a Chinese missionary as having belonged to the Pala school of art are Dhruvapa and his son Vitapala.

During the medieval period that is the six hundred years from the death of Harsha to the Mohammedan invasions, architecture was the principal form of art. Much was destroyed by the Moslems. The Rajputs of the tenth and eleventh centuries undertook many great building and engineering feats. A medieval Indo-Aryan type of architecture was evolved in



THE CROTON TEMPLE OF VISHNU KARMAM

One of the many underground temples in India and probably the most ancient type of temple

Northern I, characterised by a curvilinear superincumbent at the top and bulging in the middle. This was unknown in Southern I where the Dravidian pyramidal tower prevailed. Delhi was captured by the Moslems in 1193, an event which was commemorated by the founding of a mosque, the earliest Islamic building in India. Islamic architecture now came into being. The dome and minaret were introduced and combined with the indigenous features of Hindu art. An outstanding monument of this period is the enormous Qutb Minar, a mosque over 200 ft. high built at Delhi by the sultan Iltutmish and completed in 1332. Among other of the Delhi sultans who were great builders was Iltutmish (1316-1351) who with the aid of his architect Malik Ghori Sahana entered Delhi and built many new towns. He was also careful to restore earlier monuments. Before I came under the rule of the Mogul emperors, mention must be made of the artistic achievements of the emperors who ruled in Vijayanagar in Mysore from 1336, the traditional date of the founding of the empire, until 1565 when the city was sacked by Muslim armies from the N. The temples built under the Vijayanagar dynasty show a magnificent and vigorous style contrasting with the more staid Indo-Islamic style. The arts of painting and sculpture also flourished.

Under the Mogul emperors a blending of Hindu, Islamic and Persian styles resulted in a flowering of the arts, particularly architecture and sculpture. The beautiful city of Fatehpur Sikri is perhaps the greatest monument to Akbar who however planned his own mausoleum at Sikandra. This with its four terraces and white marble superstructure was completed in 1612 during the reign of Jahangir. In his successor Shah Jahan (1627-58) are owed the most celebrated examples of Mogul architecture—the mausoleum of Shahjahan near Lahore and at Agra the Pearl mosque and the Taj Mahal. The Persian influence predominated over the

Hindu and decoration became more elaborate than was to the taste of the earlier Mogul emperors.

Painting received a great impetus through the patronage and connoisseurship of the three Mogul emperors, Humayun, Akbar, and Jahangir. Humayun, father of Akbar, spent some years of exile in Persia, and on returning to his throne he brought with him Persian painters who influenced the Hindu school. Painting has had a long tradition in I. Mention has already been made of the Ajanta frescoes. Mural paintings of great merit also survive from the sixth century in the caves of Bagh, nearly 300 m. N. of Ajanta. These apart, however, and except for some MS. illustrations of the medieval schools of painting in Bengal, Nepal, and Gujarat, little survives from the centuries before the Mogul era. Mogul painting is mainly miniature work but derives from Persian and not from the traditional style of MS. painting. Akbar had a number of painters working for him, many of them Hindu and many whose names are known. Subjects chosen were portraits of men of the time and scenes chronicle events. W. influences were also felt. Gradations of tone, effects of light and shade are features of Mogul painting. In this it is distinguished from the work of the painters of Rajputana, Bundelkhand, and the Himalayan Punjab. Rajput painting derived from the traditional mural art and was devoted to illustrating the stories of legend and religious epic. The colouring is mostly flat. The two styles often intermingled but in the best work are distinguishable. Mogul painting declined during the reign of Aurangzeb who discouraged the arts for religious reasons. Rajput painting continued into the eighteenth and nineteenth centuries and centred particularly in Jaipur. Later Rajput painting is seen at its best in the Pahari art, named from the hill country of the Punjab where it flourished. It was divided between the schools centred at Jammu and Kangra. Kangra painting is graceful in line and soft in colouring. In the nineteenth century it declined although portrait painting was encouraged by the Sikh rulers of the Punjab. As the century advanced W. influences weakened many of the distinctive features of Indian art, but in the early twentieth century a movement in recognition of the artistic heritage of I. in which the Tagore family was prominent, brought about a renaissance of the arts; Dr. Abanindranath Tagore has given a unique display of Ajanta art motif in brilliant paintings. In Bombay a contemporary school of art sought to assimilate European influences, especially Fr. Among modern Indian painters and sculptors may be mentioned Bhabani Charan (Ml. K. Krishna Hebbar, and Chintumon Kar.

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Indiagher, Lake, see ENARE.

India House, the name by which East India House, demolished in 1861, the headquarters of the old East India Company, in Leadenhall Street, was known. Prior to such occupation the Company transacted its affairs from 1621 to 1638, in Crosby Hall, Bishopsgate. The modern I. H. which is situated in Aldwych, London, was opened by the King-Emperor and Queen-Empress in July 1930. The new building was the outcome of proposals submitted by Sir Atul Chatterjee himself, Lord Irwin's Gov. ultimately accepting the project, and the Legislative Assembly voting the sum of £324,000 for erection and equipment. The building is essentially Indian in provenance; its purposes are not exclusively official, but are also directed towards providing a London home for India. It is the work of Sir Herbert Baker, who had much to do with the building of New Delhi.

Indiana, N. central state of the U.S.A., generally known as the 'Hoosier State', the second to be erected from the old N.W. ter. It covers an area of 36,291 sq. m., 305 of which are water-surface; and its greatest length and breadth are respectively 277 m. and 145 m. It is bounded on the N. by Michigan, on the S. by Kentucky, on the E. by Ohio, and on the W. by Illinois. The state lies in the Mississippi valley and in the basin of the Great Lakes, and is well watered by sev. streams, of which the most important is the Wabash. The greater part of the surface is undulating prairie land. The fertility of the soil is largely increased by a system of under-draining. Agriculture is the prin. industry, 91 per cent of its total area being farms; the chief crops are corn, wheat, oats, hay, and rye. Barley and maize are grown, as also is tobacco. Large quantities of tomatoes and other vegetables and fruits are grown for the markets, and exported, and the rearing of livestock has increased in recent years. The chief mineral productions are coal, petroleum, limestone, sandstone, building-stones, etc., and natural gas, the chief field of which is in Delaware county. The production of pig-iron is considerable, and the clay-working industries are important—these yield bricks, tiles, pipes, pottery, etc. Other manufs. include iron, glass, carriages, railroad cars, woollens, etc. Transport is well provided by the natural facilities of the Ohio and Wabash rivers, and by Lake Michigan; while by land there is a total of 7,187 m. of steam railway and 2,135.07 m. of electric. Added to this all the lines from the E. to Chicago pass through Indiana, and other connections with E., W., N., and S., which are of great importance to trade. The prin. univs. are Purdue Univ.; Indiana Univ.; De Pauw Univ.; and the Univ. of Notre Dame. I. is governed by a General Assembly consisting of a Senate of 50

members elected for 4 years and a House of Representatives of 100 members elected for 2 years. The climate is remarkably equable. Pop. 3,427,700. The State is sixth in coal production in the U.S. The leading cities are Indianapolis, Fort Wayne, South Bend, Evansville, and Gary. See W. H. Smith, *History of Indiana*, 1897; S. S. Visser, *Economic Geography of Indiana*, 1923; E. Logan, *A History of Indiana*, 1924; Federal Writers Project, *Indiana: a Guide to the Hoosier State*, 1941.

Indianapolis, cap. and the largest city of Indiana, U.S.A., 195 m. S.S.E. of Chicago by rail, and 824 m. W. of New York. It is one of the best built and most attractive inland cities of America. Many of its streets are 100 ft. wide and diagonally intersect the four main avenues of Massachusetts, Indiana, Virginia, and Kentucky, which radiate from the Central Park, Monument Place. The city is encircled by a railway, connecting all the great trunk lines, thus facilitating traffic. The chief buildings and institutions are the state Capitol, Co. court-house, Board of Trade building, public library, masonic temple, central hospital, Blind and Deaf and Dumb Asylum. As a centre of education, I. is of considerable importance, the most noted institutions being the univ., the Central College of Physicians and Surgeons, technical institute, etc. The manufs. comprise iron goods, furniture, carriages, waggons, glass, woollen and cotton goods, and agric. implements. It is a live-stock centre, with stockyards and packing houses. There is a large trade in grain. Fort Benjamin Harrison is situated near. Pop. 386,900. See B. R. Sulgrove, *History of Indianapolis and Marion County*, 1881.

Indian Archipelago, see EAST INDIES.

Indian Architecture and Art, see ARCHITECTURE—India, and INDIA (ART).

Indian Corn, see MAIZE.

Indian Cross, see NANTURTIUM.

Indian Fig, see BANYAN TREE.

Indian Fire, a white signal light, composed of seven parts of sulphur to two of realgar and twenty-four of nitre.

Indian Hemp, see Bhang and Hemp.

Indian Ink (or Chinese Ink), an ink first made in China; compound of lamp-black and gum, moulded into sticks and sometimes perfumed. Used in China for ordinary writing but in Europe for illustrative work.

Indian Millet, a cereal grass, species of *panicleum* (P. *maximum*), widely grown in Mediterranean countries and the E. Believed to have been the first wild grain to be cultivated. Replaces rice in drier climates, a good bread being made from it. Also serves as cattle fodder; also called Kafir corn.

Indian National Congress. The origin of this C. may be set down to a suggestion of Lord Dufferin's, and the first meeting was held in 1885 during his viceroyalty. W. C. Bonnerji being the first president. This first meeting was attended by seventy-two delegates, mostly lawyers, schoolmasters, and journalists. A. O. Hume largely inspired the movement,

which was meant to grow into a native parliament. At the first C. loyalty to England was stressed. The next C., a year later, had 440 delegates. The movement was in the beginning essentially Hindu and from the W.-educated classes; the Muslims had little to do with it, the Moslem League Association being their representative body. In 1916 both bodies combined in a declaration for Indian Home Rule, and it was evident that C. had now been captured by the extremists. From about this time it became somewhat overshadowed by the organised Nationalist movement under Gandhi's leadership. Thus the I. N. C. owed its birth to Indians who had been attracted by ideals learnt from Eng. culture and teaching; with them were joined from opposite motives other Hindus whose yearnings were for the past days of Indian glory and who hated European rule. It was from the union of these opposites that the Nationalist movement sprang, which found its fruits in the Brit. declaration of 1917 leading to responsible gov. in India. The goal of the Congress is expressed in their phrase 'purna swaraj,' first interpreted as 'complete independence' but later modified as meaning 'not a ship at will.' See further under INDIA—History. See C. F. Andrews and G. Mukerji, *The rise and growth of Congress in India, 1937*; Sir R. Coupland, *Indian Politics, 1936-1942, 1943*; J. T. Gwynn, *Indian politics, 1924*; Sir H. Lovett, *History of the Indian Nationalist Movement, 1921*; B. Pattabhi Sitaramayya, *The History of the Indian National Congress, 1935*.

**Indian Mutiny**, see INDIA—History.

**Indian Ocean**, is bounded on the N. by Asia (Arabia, Persia, India); on the E. by Indo-China, Sunda Islands, Australia, and the meridian of the southernmost point of Tasmania; on the W. by Africa and the meridian of Cape Agulhas; on the S. by the 60th parallel of lat., but the S. boundary is variously given by different authorities. From Cape Agulhas to Tasmania is some 6000 m., and this is the greatest breadth of the I. O. The two great bays on either side of the peninsula of India, the bay of Bengal on the E. and the Arabian Sea on the W., with its arms the gulfs of Aden and of Oman, belong to the I. O. But the Red Sea and Persian Gulf, which communicate with the said arms by the narrow straits of Bab-el-mandeb and of Ormuz respectively, are separate seas. The Pacific Ocean can be approached from the I. O. by means of the channels between the Sunda Is. and the Timor Sea, whilst the Mediterranean Sea in the N.W. communicates with the I. O. by means of the Suez Canal and the Red Sea. There are two important straits, Mozambique Channel in the W., separating Africa from Madagascar, and Palk Strait in the E., separating India from Ceylon. The I. O. is dotted about with thousands of Is., some of which are of coral formation, as the Maldives, Chagos, and Cocos groups; others, such as the Crozet Is. and St. Paul's Is., are volcanic. The chief Is. in the W. are Madagascar, Mauritius, Bourbon, the Seychelles, and

Socotra, belonging to Africa, whilst the prin. Is. in the E. are the Laccadives, Maldives, Ceylon, the Andaman Isles, and Nicobar, belonging to Asia. In spite of these innumerable Is., the I. O. is mostly navigable. The prin. large rvs. discharging themselves into this ocean are the Zambezi, Indus, Ganges, Brahmaputra, Irrawadi, Godavari, and Kistna. The bed of the I. O. attains to a depth of about 2000 fathoms in some parts. The mean temp. of the surface water is over 80° F. in all parts N. of 13° S. There are two warm currents moving southwards, the Mozambique and Agulhas currents, whilst a colder current in the E., called the W. Australian current, crosses the I. O. moving northwards.

**Indian Orders of Knighthood** are two in number, the Most Exalted Order of the Star of India, and the Most Eminent Order of the Indian Empire. The first was estab. in 1861, and besides the king and a grand master as the viceroy of India for the time being, was divided into three classes: Knights Grand Commanders (G.C.S.I.), Knights Commanders (K.C.S.I.), and Companions (C.S.I.). The badge is worn pendant from a light blue ribbon, with white stripes edgewise; the collar is composed of alternate links of lotus flowers, red and white roses, and palm branches enamelled in gold, with an imperial crown in the centre. The mantle worn is of light blue satin, lined with white. The motto is: 'Heaven's light our Guide.' The Order of the Indian Empire was instituted in 1877. In addition to the sovereign (grand master) and the viceroy for the time being, there are three classes in the order: Knights Grand Commanders (G.C.I.E.), Knights Commanders (K.C.I.E.), and Companions (C.I.E.). The badge is hung from a purple riband, and the collar is composed of elephants, peacocks, and Indian roses. The motto is *Imperatrix Auspiciis*.

**Indian Pink**, see PINK-ROOT.

**Indians of America**. See AMERICAN INDIANS.

**Indian Shot**, or *Canna indica*, best-known species of the order Cannaceae, and is to be found in all tropical countries. The plant receives its name from the resemblance of its seeds to shot. The seed yields a beautiful red colour. The rootstocks are very large, spongy, and jointed, and are used in Brazil for poisons in tumours and abscesses. The rootstocks of some of the other species of *Canna* are more valuable, yielding the starch called *tapioca* or *cassia*.

**Indian Summer**, season of mild weather on the Atlantic Coast and in the Central States of the U.S.A. usually occurring in Oct. or Nov., but sometimes in Dec. The sky is cloudless, the atmosphere hazy, and the temp. extremely mild. The tendency to extreme dryness causes a number of forest and prairie fires. This summer corresponds to what is known in England as St. Luke's Summer, which occurs at the end of Oct. or the beginning of Nov.

**Indian Territory**, formerly a ter. of the U.S.A., about the size of Ireland. It lay

W. of Arkansas, and was separated from Texas by the Red R. This country was especially reserved for the Indian tribes by the gov. of the U.S.A., and was assigned to them by Act of Congress in 1830. The ter. contains fertile prairies and rich valleys, and is crossed by a broad belt of forest about 40 m. wide called 'Cross Timbers.' The climate is very pleasant and salubrious, and agriculture and cattle rearing formed the chief occupations. Indian Ter. was occupied by five tribes: the Cherokees, the Creeks,

Indis and Pakistan assumed dominion status the I. O. as such ceased to exist, its functions being taken over by the Commonwealth Relations Office, Div. B. See Sir M. G. O. Seton, *The India Office* (Whitehall Series), 1926.

India-rubber, see *IRUBBER*.

Indicator, term in chemistry to denote a substance used for the detection of minute amounts of materials. Commonly, the word is applied to those bodies that indicate an acid or alkaline reaction. One of the most frequently used Is. is



U. S. Information Service American Embassy

A CONSTRUCTION CREW OF CHOCKTAW INDIANS WORKING ON A STATE ROAD NEAR MUSKOGEE, OKLAHOMA

the Chocktaws, the Chickasaws, and the Seminoles. Admitted with the white-settled central ter. to the Union as the state of Oklahoma in 1907.

India Office, Brit. Gov. dept. set up in 1858 to administer the affairs of India. Its political head, the secretary of state for India, was assisted by an under-secretary of state. The I. O. estimates were met from Indian Gov. funds. Prior to 1858 Indian affairs were conducted by the E. India Company, under the supervision of a gov. Board of Control, whose president was responsible for Indian affairs in Parliament. On the transfer of India to the Crown in 1858 the secretary of State was assisted by a consultative council; this Council ceased to exist only in 1937 when some of its functions passed to a body of advisers. In 1947, when

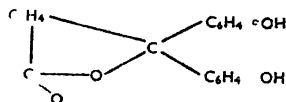
litmus, a substance prepared from certain lichens. This with alkalis gives a blue, and with acids a red coloration, and in most cases the colour change is sharply defined. In titrating acids and alkalis, care has to be exercised in the choice of I. For example, in the case of carbonates, litmus may not be used (unless the titration be performed so that all the carbon dioxide is expelled, since the latter has a distinct effect upon the I.). Similarly, the Is. prepared synthetically require discretion in their use, e.g. phenol phthalein is an excellent I. for strong acids and bases, but may not be used for the titration of a weak acid by a base, since the end-point is not sharp. Another frequently used I. is methyl orange, which is the sodium salt of an acid, helianthine. This is a sodium salt of an organic acid,

which in presence of alkalis is yellow, and in acid solution red. It is, however, necessary that the acid should be 'strong'; otherwise no sharp end point can be obtained. Of other natural ls may be mentioned cochineal and extracts of red cabbage and other vegetables, but the greater number of the more recent products belong to the benzene series.

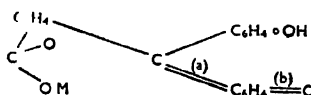
Much has been written concerning the theory of indicators, with a view to explaining the change of colour that occurs according to the reaction of the solution. The first adequate explanation was offered by Ostwald, who used his views upon the ionic theory of solution (*q.v.*). According to this view an acid is a substance which in aqueous solution yields free hydrogen ions, and conversely an alkali is one which yields free hydroxide ions. Consequently a solution which contains ions of hydrogen and of hydroxyl in equivalent amounts may be regarded as neutral. This condition is realised in the case of pure water, which is only slightly dissociated into its component ions.

Further a strong acid or a strong base is one which in aqueous solution is strongly dissociated. On the other hand a 'weak acid' is one which in solution is not dissociated to any great extent, but remains *non ionised*. The assumption made by Ostwald in his theory to account for the behaviour of ls is that the latter are either weak acids or weak bases, and that the change of colour is due either to the presence of the non ionised substance or of a coloured ion. In the case of phenol phthalein it is supposed that we are dealing with a weak and colourless acid. In the terms of the dissociation hypothesis, this is only dissociated to a slight extent, and any increase in the concentration of hydrogen ions, such, for example, as takes place if a strong acid be present, tends to diminish the dissociation. In consequence, there is no colour change. If, however, an alkali such as sodium hydroxide be added, the hydroxyl ions associate or combine with the hydrogen ions of the l, leaving cations of sodium and the anions of the l. The latter in this case are supposed to be coloured, and therefore the colour change is manifest. Methyl orange acts as a very weak base, yielding in solution red cations, and small numbers of hydroxyl ions ( $\text{OH}^-$ ), the undissociated substance is yellow. On addition of an acid the hydrogen ions of the latter combine with hydroxyl ions of the l, and more of the undissociated part of the l then ionises so that the red colour of the cations is seen. Addition of alkali, on the other hand, suppresses the ionisation of the l, which therefore shows the yellow colour of the undissociated molecules. In addition to the above theory there has been proposed a so called chemical explanation depending upon the structural differences existing between the 'lactoid' or colourless form and the 'quinonoid' or coloured form. It has been assumed that all coloured substances possess the quinonoid structure (see QUINONE), and one view of the change of colour of ls is based upon

the change into the quinone type. Phenol phthalein in the free state, is represented by the formula



its acidic properties being due to the presence of a phenolic (i.e.  $\text{OH}$ ) group. On treatment with alkalis, a change in structure occurs, and the salt is regarded as having the following constitution —



where M is a univalent metal. (The double bonds (a) and (b) present in the molecule are characteristic of the quinonoid structure.) This latter view is in agreement with Hantzsch's theory of pseudo acids and pseudo bases, and is not entirely antagonistic to Ostwald's dissociation hypothesis.

A large range of ls is now available, so that it is usually possible to select a suitable one for indicating any desired concentration of hydrogen ions (see HYDROGEN ION CONCENTRATION). A 'universal indicator' is a mixture of various ls made up in such a way that it shows a series of colour changes over a large range of hydrogen ion concentration. Universal ls are extremely useful in applied and technical chemistry for the rapid estimation of hydrogen ion concentration.

External ls are substances that are used to determine the end point of a reaction but must not be actually introduced into the reacting mixture, since they would either cause undesirable changes or would be obscured by the colour of the solutions concerned. They are usually placed in drops on a white tile and 'tops' of the reacting mixture are removed from time to time with a glass rod and added to the l on the tile, when the colour changes may be noted.

Fluorescence ls are substances which indicate variations in hydrogen ion concentration by changes in the colour or intensity of the fluorescence they emit in daylight or ultra violet light. They are very useful in determining the acidity of coloured or cloudy liquids, e.g. fruit juices.

Indiction, term used in chronology to denote a period of fifteen years. The meaning of the word originally signified the imposition of a tax, but it gradually crept into the calendar of historians, principally ecclesiastical, to mark time, thus, in the Middle Ages, the dates of charters were expressed in ls as well as in years of the Christian era. The paper l, which has alone survived, was reckoned as starting Jan. 1, 313.

**Indictment**, in criminal law, is a written accusation against one or more persons of a crime preferred to, and presented upon oath by, a grand jury. All treasons and felonies, misprisions of either, and misdemeanour of a public nature at common law (e.g. seditious riots) are punishable on I. The following is an example of an I. for larceny: 'Kent to wit: The Jurors for our Lord the King upon their oath present that Richard Jones on the 1st day of May, in the year of our Lord 1901, four sacks of coal, of the goods and chattels of William Hirst, feloniously did steal take and carry away: against the peace of our Lord the King, his crown and dignity.' The formal parts are:

(1) the commencement, the prin. feature of which is the venue or place from which the grand jury is drawn, and, generally, where the crime was committed; (2) the name of the accused; a misnomer will be cured by the defendant pleading to the I.; (3) the time when the offence was committed, but time is not material except where of the essence of the offence, as e.g. burglary, which must be between 9 p.m. and 6 a.m.; (4) description of the facts and circumstances essential to constitute the crime: an omission of an essential ingredient of crime is not cured by plea or verdict; (5) the places may, in some cases, be required to be stated; in others the venue in the margin (see the form), or co., or other div., is deemed to be the place for all facts set forth in the I.; (6) conclusion—errors in the formal conclusion will not vitiate an I. An I. may contain any number of counts, but not more than one offence can be charged as a rule in the same count. The object of including more than one count is to charge the accused either with different offences, or a previous conviction, or with being an habitual criminal (see CRIMINAL LAW), or to describe the facts of one transaction by different terms, so that if on the evidence they do not sustain one charge they may another. For example, a count for larceny is very often accompanied by a count for receiving. As a rule, it is against the policy of our criminal law to charge different felonies in different counts, i.e. as opposed to charging different species or aspects of the same offence or transaction; and, as a rule, a count for a felony is never joined with a count for a misdemeanour. Different misdemeanours may be charged in different counts, provided all the acts were substantially one transaction, or constituted transactions essentially similar.

**Indies, East and West, see EAST INDIES and WEST INDIES.**

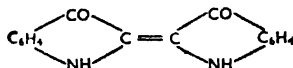
**Indifferentism**, philosophical term, denoting the conception that all things in life are of 'indifferent' value, being outside the moral law. I. in this sense originated with the Stoics, who, in common with the Cynics and the Sceptics, held that only virtue and vice possessed absolute value, all qualities other than these two being 'indifferent.' With the Middle Ages, the term came to have a second meaning, especially as it appeared in the teachings of Adelard of Bath. With him

I. came to mean the philosophy that life is either particular or universal, moral or immoral, according to the point of view from which it is regarded. Values can, therefore, only be indifferently related to any idea of absolute value. Kant used the term 'indifferent' as meaning extra-moral, but I. has come now to be used simply to denote a negation of all values which in life, it is supposed, cancel each other out, leaving no balance of absolute right or wrong.

**Indigestion, see DYSPEPSIA.**

**Indigirka**, riv. rising in the Stanovo' highlands of Yakutsk in E. Siberia, and flowing into the Arctic Ocean. Length nearly 1000 m.

**Indigo**, naturally-occurring dye-stuff obtained from various plants. Chief among these are species of *Indigofera* (e.g. *I. sumatrana*, from which the Bengali I. is prepared). I. is also present in the juices of *Isatis tinctoria*, or the woad plant, which was cultivated in England until quite recently for the preparation of a fermentation vat used in I. dyeing. I. occurs in the form of a glucoside, known as *indican*, and this latter, on exposure to the influence of atmospheric oxygen and a ferment present in the leaves of the indigo-bearing plant, is converted into the insoluble blue, *indigotin*, which is the essential principle of I. The preparation of natural I. is carried out as follows: the plant is cut down, steeped in vats for about twelve hrs. and the extract, which is of a greenish colour, separated and run into fresh vats, where it is stirred vigorously, so as to bring the indican into contact with the atmospheric oxygen. Insoluble I. is precipitated as a mud, which is collected, pressed, dried, and cut into cubes. Various components other than indigotin are present, the most important being indirubine, or indigo red, indigo green, and indigo brown. The importance of natural I. as a dyestuff has greatly diminished during the last few years owing to the perfection of various synthetic processes for its manu. The success of these has been in large part due to the work of Adolf von Baeyer, who, by a series of masterly researches, elucidated the constitution of the dyestuff, and showed that it could be correctly represented by the formula



I. is now manufactured by a process shown in the outline in the diagram (page 475). The synthetic product is considerably cheaper than the natural, and has practically entirely replaced it. Sev. thousand tons of indigo are manufactured annually, particularly in Great Britain and the U.S.A. Many other dyes related to I. in composition have recently been discovered, though they do not yet rival I. itself in importance. **See also DYES and DYING.**

**Indigo Bird** (*Cyanopica cyanea*), small bird of the Finch family, native of the



U.S.A. It is about 5½ in. long, the adult male is of a beautiful blue colour, whilst the female and young are of a bluish-grey. It has a sweet song, something like that of a canary, and frequents open spaces.

Indirect Rule, form of native administration which is characteristic of the Brit. tradition of colonial rule in the African colonies and also in Brit. Malaya (up to the time of the modern federation of Malaya). The principle of I. R. is that native institutions are the most appropriate agencies of gov. rather than any system which seeks to transplant into the

father confessor. The relationship is a delicate one and depends much on individual personalities. On the whole, it works well in this colony. Though the principles of I. R. are in accord with Brit. political sentiment, the actual evolution of the system has been more or less fortuitous; and it was the existence in Uganda of a well-developed political organisation in Buganda, and in N. Nigeria, of the Muslim emirates which facilitated the use of native authorities in a way which could not have been contemplated if experience had been con-

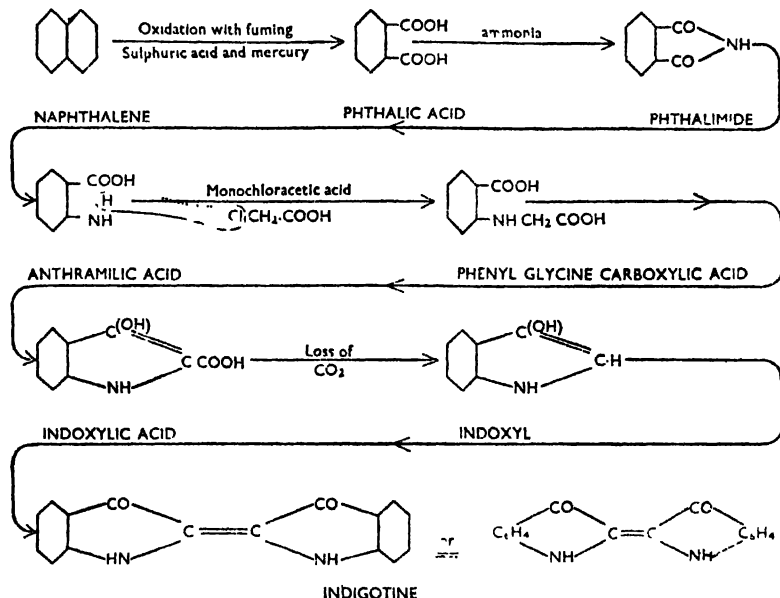


DIAGRAM OF THE PROCESS OF MANUFACTURE OF INDIGO

colony a replica of European political institutions. Conformably to the Brit. sense of trusteeship (see COLONIAL TRUSTEESHIP) and imperial experience the policy of I. R. affords to native peoples not only an opportunity for self-development, but the possibility of adjusting themselves with the least avoidable disturbance of their own way of life to the novel conditions which by contact with the white men they now must meet. N. Nigeria is the original, and classical, example of I. R. which was devised by its conqueror and first governor, Lord Lugard (q.v.), nearly half a century ago. That system with but slight modifications persists there to-day. The typical political unit is the prov. in which the chief executive authority is a Muslim emir. To him a Brit. resident, who is the instrument of higher policy, acts as adviser, and in some cases as

finer, e.g. to the backward societies of S. Nigeria or the weak political units of some parts of Brit. E. Africa. In the latter, however, in Tanganyika, Sir Donald Cameron rendered valuable services in extending the system of I. R. as he himself had helped to develop it in N. Nigeria. Nor, again, does the system owe its origin to any preconceived theory of rule any more than does its opposite, direct rule: for all European govts. have been confronted by the problem of administering large colonial areas with a small European staff mostly ignorant of native custom and language, and in all cases they have been compelled, at least in the earlier days, to make use of chiefs or other available native authorities.

There has been much controversy over the relative merits of I. R. and direct. The most effective means of inducing

native opinion to accept salutary innovations is the end sought in the system of I. R., which relies on the appeal to the respect of a people for its own leaders, and its pride in institutions which it can call its own. The system of direct rule, on the other hand, considers rather how best to make quickly effective the decisions of superior authority, and sees its most effective agency in the council system, or in the training of chiefs as subordinate agents of the executive gov. In the Union of S. Africa the form which native administration has taken has been dictated by the conviction that Bantu development must be regarded chiefly in relation to the place which the native must occupy in a society dominated by European institutions—hence the policy of 'segregation.' It is, therefore, understandable that S. Africa should prefer a system of direct administration in native affairs, and should rely on the council system as the best for native areas with organs of local gov. It is also evident that the traditional authority of I. R. would not be suitable for adoption as an agency for managing the large native pops. resident in the urb. centres of the Union of S. Africa. In S. Rhodesia the system of direct rule, though it rests in principle on the same basis as in S. Africa, is less developed, notably in the matter of suitable tribunals. Although the liberal provision made for native lands is a prominent feature of S. Rhodesian policy, the Dominion has not yet evolved a comprehensive scheme for the regulation of native affairs. Kenya colony, on the other hand, has in operation a fully-developed system of native administration founded on the creation of dist. councils presided over by an administrative officer, with native courts consisting of *ad hoc* nominated members. The adoption of this system of direct rule is not due to any assumption (as in S. Africa and in the Fr. African colonies) that the welfare of the native lies in his rapid assimilation of the use of 'civilised' institutions; but rather to the fact that the Kenya Gov. had no sufficient confidence in the traditional authorities to justify their exploitation whether as judicial tribunals or as agencies of local gov. But it is claimed for the Kenya system, not unjustly in the circumstances, that it is the best adapted to a colony where Africans were continually in close contact with Europeans and also that it provides opportunities for educated natives to take a part in local gov.

In the Fr. African terrs. the adoption of a system of direct rule was deliberate. Whereas Brit. sentiment favours the setting up of institutions which afford a training in the arts of self-gov. besides holding out the prospect of autonomy in the future, this forms no essential part of the Fr. theory of colonial administration. The Fr. goal is not native independence but a progressive association with Fr. methods of administration and with Fr. economic and social institutions. It is natural that, in this scheme of native development, the traditional indigenous institutions should not appear to have the

intrinsic value which the scheme of I. R. assigns to them. It is claimed, not without some justification, that this system gives the metropolitan administration a more efficient and more easily controlled agency for development than any other system to be found in operation in Africa, especially as the chiefs are now an educated class trained at one of the chiefs' schools. Critics, however, of the Fr. system think that it is not to the Africans' own interests to pass as rapidly as possible from the use of his indigenous institutions and of his own language to a régime of Fr. civilisation and language. They hold, too, that the operation of the system must inevitably prejudice the development of a spirit of responsibility and initiative. In the Belgian Congo the system of native administration is in a state of transition. The gov. is as convinced as the Brit. that a traditional chief can render better service to the administration than one who is appointed (as they are in some of the Brit. E. African colonies); but the Congo Gov. is not yet prepared to give the chief either the same judicial authority or the same position in local gov. as would be assigned to him in Brit. terrs.—like the Fr., the Belgian Gov. has less hesitation than the Brit. in removing their chiefs. Moreover, with the exception of the Ruanda-Urundi, the Belgians have encountered few traditional authorities who have commanded a wide measure of support among their people.

In both Brit. W. and E. Africa the prevailing policy is still that of I. R., but is encountering ever more criticism. In W. Africa there has been no European colonising enterprise and consequently less direct impetus towards the development of responsible self-gov. than in E. Africa (especially Kenya with its relatively large European and Indian pops.); but the principles of I. R., if not necessarily incompatible with the avowed ideal of self-gov. by representative institutions '—the tendency to-day is towards greater African (elected and nominated) representation in the legislative councils—' are so far alien to it as to presuppose considerable modifications of native institutions before they can fit into any scheme involving an elected parliament' (Lord Hailey). Fr. policy on the other hand does not envisage a future self-gov. for their colonies; development in their case is regarded as adapting the colony to pre-empt in reality the position now assigned to it in principle as an integral part of France. This is emphasised in the definition of the constitutional and legal status of the overseas dept. and terrs. within the Fr. Union (see FRANCE—*Constitution*).

The innate loyalties of the African have always been to his tribe or vil.; loyalty to the larger organisation which the white man has created can be built up only gradually. The use of the innate loyalties to introduce the idea of self-gov. was, as shown, above, the essence of the fruitful principle of I. R., but the last ten years have seen a silent revolution of imperial policy, as a result of which the days of I. R. seem to be numbered. There are two

necessities of the coming generation for which I. R. cannot provide. By the first principle of Brit. Imperial rule the purpose of the suzerain power is to make available to the colonial peoples the characteristic benefits bestowed by gov. upon its subjects at home--that is, to-day, the manifold services of the 'welfare' state. But as a method of administering social services the traditional tribal system of Africa is hopelessly inadequate. Secondly, the future political system must offer scope for the natural aspirations of Africans who, after contact with European political thought, expect as a general right those opportunities of public service and advancement which in the tribal system could only fall to them by the accident of birth. These two necessities, that of the *carrière ouverte aux talents* and that of the large-scale administration dictated by the economics of the social services, in themselves mean the eventual doom of I. R. Yet the system cannot be hurried to extinction: for the tribal system imposed its own restraints upon power, variable yet always substantial--the restraints of custom, in which the system itself was rooted. All over Colonial Africa these are now passing. The required restraining element cannot come solely from dependence upon a popular franchise. A loyalty comparable to that evoked by the old tribal system must be engendered. Hence the efforts being made by the Brit. Colonial Office to educate Africans in self-gov. through participation in both legislative and executive responsibility at the local level. The test of their success will be the development of a true loyalty to social units of a national scale; this is the great problem that challenges the emancipating imperialism of the twentieth century. See Lord Lugard, *The Dual Mandate in Tropical Africa* (11th ed.), 1929; H. B. Thomas and R. Scott, *Uganda*, 1935; Sir R. Winstedt, *A History of Malaya*, 1935; L. S. B. Leakey, *Kenya: Contrasts and Problems*, 1936; M. Perlman, *Native Administration in Nigeria*, 1937; C. K. Meek, *Law and Authority in a Nigerian Tribe*, 1937; R. Emerson, *Malaysia: a Study in Direct and Indirect Rule*, 1937; M. R. Diller, *British Policy in Kenya Colony* (anti-imperialist polemic by an Amer. author), 1937; Lord Hailey, *An African Survey*, 1938; Sir D. Cameron, *My Tanganyika Service and Some Nigeria*, 1938; M. Wight, *The Gold Coast Legislative Council*, 1947.

Indium, rare metallic element which occurs in certain specimens of zinc-blende, and resembles aluminium and thallium in its properties. Its symbol is In, its atomic number 49, and its atomic weight 114.8. It is a soft white metal, unacted on by air or water at ordinary temps., but on heating it burns to its sesquioxide with a blue-violet flame, which gives two characteristic lines in the indigo part of the spectrum; hence its name.

Individual (Late Lat. *individualis*, that which is not divided), originally denoted a thing indivisible in substance; Milton in his *Animadversions* speaks of the 'individual' Catholic Church. Hence, it also

meant inseparable; cf. *Paradise Lost*, iv., 406, 'an individual solace.' Later it was used, as opposed to the word collective to mean pertaining to a single person, as in the phrase 'individual effort,' or to anything of a striking and original character. In colloquial speech it is often used as a noun to denote man or person.

Individualism, see ANARCHISM and SOCIALISM.

Individual Psychology, see under PSYCHOLOGY.

Indo-China, or Farther India, also known as Chin-India, S.E. peninsula of Asia, extending southwards into the Indian Ocean. It comprises Tongking, Annam, Fr. Cochín-China, Cambodia, Laos, Siam, the Shan country, Burma, and Malacca. See under all these names, and also INDO-CHINA, FRENCH.

Indo-China, French, name under which were incorporated the Fr. colony of Cochín China, the Fr. protectorates of Tongking, Annam, Cambodia, and Upper and Lower Laos, and Kwangchau-wan, leased from China. Even before the Second World War Fr. Indo-China was in practice a federation of the Fr. colony of Cochín China, with its own governor, and of native states with varying forms of gov. After the capitulation of Japan (1945), when France resumed her relations with Indo-China, the political institutions had changed: a republic had been founded in Tongking which sought, by force of arms against the Fr., to exercise its authority over Annam and to extend its influence to Cochín China. The mechanism of the Fr. administration, destroyed by the Jap. invaders, was only partially re-established by the returning Fr. authorities (1945-46). Cochín China had ceased to be a colony under direct Fr. administration: a local gov. had been constituted and France was represented by a Commissioner of the Fr. Republic. Following a conference at Fontainebleau (Sept. 17, 1946) France appears to have recognised the formal status of the native republic of Viet Nam, comprising Annam and Tongking, but subject to that republic forming part of the Fr. Federation of Indo-China. Before the entry of the Jap in 1911 the whole of Fr. Indo-China was under a governor-general, whose seat was at Hanoi (Tongking) and who was assisted by a secretary-general. Each protectorate had, as its head, a resident-superior, but Cochín China, being a Fr. colony (represented in the Fr. Chamber by one Deputy) was administered by a governor. There was a Grand Council for Economic Affairs, and a Gov. Council for the whole ter., and also a Grand Council for Economic Affairs for each state. In the protectorates, matters concerning natives come before a native tribunal, and a Fr. court tries matters affecting Europeans. In Cochín China, Fr. magistrates are responsible for justice to both Europeans and natives. Before the Second World War there was a military force of three divs., and a naval force of sloops, gun-boats, and surveying vessels.

Though Annam lies in the torrid zone,

Tongking on the whole enjoys an excellent climate. The heat, however, in June and July, is sometimes almost intolerable. Tigers, buffaloes, rhinoceroses, and elephants abound in the mts. of Annam, and much fishing is carried on. Rice is the chief crop of both Annam and Tongking. The products of Cambodia include rice, maize, beans, sugar, cotton, tobacco; also silk and pepper. There are schisto forest-clad tracts in the N.E., producing teak, bamboo, and other valuable timber, and in the N. and W. there are mts. containing iron, limestone, phosphate, sapphire, sandstone, and some copper. The prin. native industry is salting and smoking fish left in ponds when the Great Lake empties, and which is filled up by the overflow of the Mekong R. The total value of Fr. imports in 1939 was 2382 million fr. and of exports, 349.5 million. Of the exports France normally took nearly one-half. The univ. of Indo-China, situated in Hanoi, was organised in 1917. Area and pop.: Cochín China, 24,000 sq. m., pop. (1926) 4,616,000 (cap. Saigon, 111,000); Annam, 58,000 sq. m., pop. 5,660,000 (cap. Hue, 40,000); Tonking, 43,000 sq. m., pop. (1940), 9,261,000 (cap. Hanoi, 135,000); Cambodia, 87,550 sq. m., pop. 3,046,500 (cap. Phnom Penh, 103,000); Laos, including Luang Prabang, 100,000 sq. m., excluding Luang Prabang, 90,000 sq. m., pop. 1,000,000 (cap. Vientiane, 10,000). Total 235,886,500 (including 41,000 Fr. 236,000 Chinese).

*History.*—It was owing to the work of missionaries that Fr. influence began in S.E. Asia. Siam was the first place in which it was felt, and from there it gradually spread to Tonking and Annam in the seventeenth century. Cochín China, the original colony, did not come under Fr. influence until 1861, and then only as an indirect result of the Anglo-Fr. punitive expedition of 1860, which culminated in the sack of the Winter Palace at Peking. Anglo-Fr. co-operation in this, the second China War, prevented seizure of Chinese ter. by either; but ill-treatment of Fr. and Sp. missionaries in Cochín China gave a pretext for a Franco-Sp. expedition, and after the Sp. withdrew, the Fr. admiral stayed on at Saigon, administering the land through naval officers. This, the so-called 'rule of the admirals', marked the true foundation of France's Far E. Empire and the real beginnings of Indo-China. A protectorate was then estab. in Cambodia (of recent years considerably expanded at the expense of China). The Revolution more or less retarded progress and the Third Republic was opposed to further expansion. But Jules Ferry, Prime Minister from 1882 to 1885, determined to give France an empire in spite of herself, and backing up the adventurers on the spot, set out to acquire all Indo-China. Annam, Tongking, and Cambodia were united into a customs union in 1887. From 1893 to 1896 France gradually annexed portions of Siam E. of the Mekong R., and in 1900 the ter. of Kwangchow-wan, on the Chinese coast, was placed under the

authority of the governor-general of Indo-China. Thus, from the time of Jules Ferry the Fr. steadily pressed their conquests until they obtained possession of the whole country E. of the Mekong. Of the protectorates, Cambodia and Laos are Hindu States, decadent outposts of Indian expansion; Annam and Tongking, Chinese in civilisation and sympathy. It was in these Indo-Chinese protectorates that Paul Bert, greatest of Fr. colonial initiators, founded the system of indirect rule, or association, later applied also in Morocco. The native rulers were preserved and all gov. was in their name; native law was modified, not abolished; and industry was promoted without expelling the cultivator of the soil. In a word, Indo-China was the greatest and most successful part of the Fr. overseas empire. It was surrendered to the Jap. during the world war in 1941. The Jap. had long recognised the strategic importance of Fr. I-C. (The most important strategic points are Saigon, Cam-ranh and Haiphong.) A submarine base was under construction at Cam-ranh in 1940, in order to avoid the long, enclosed passage to Saigon. When France collapsed in 1940, I-C. fell under the Fascist influence of the Vichy Gov. (see FRANCE—History) and in July 1941 this gov., apparently unable to resist Ger. pressure, yielded to Japan's demand for bases in Fr. I-C. At the end of that month a force estimated at 40,000 was landed, the intention of the Jap. being, evidently, to attack the Burma Road (q.v., and also BURMA, SECOND WORLD WAR CAMPAIGNS IN).

During the Jap. occupation the Court of Huế (Annam) supposed that it would benefit by being on good terms with the invader, and the mandarins followed its example. A desire for independence on the part of the immature Annamites lay at the root of the violent and unjustified criticism of Fr. administration, for even to-day the whole of Indo-China still needs the technical, financial, and cultural help of France. But with the Jap. in general occupation it proved easy for the revolutionary parties to increase their influence in the inland regions, which were not effectively occupied by the Jap. The most important of these parties was the Viet Minh (an abbreviation for the name of the League for the Independence of Annam) of nationalist and communist tendencies. After the Jap. surrender, the S. part of I-C. was occupied by the Brit. and the N. by the Chinese. Probably the Annamites believed that the Fr. were to be excluded permanently. They did not wish to become vassals of China. Hence they proclaimed their independence. The revolution broke out in Tongking, where a provisional gov. was constituted under the presidency of Ho Chi Minh, chief of the Viet Minh. From that moment the political situation became very confused, the authority of the Hanoi Gov. being insecurely estab., while in Cochín China the Brit. had a hard task to maintain order in the presence of the rebel troops which had received part of their arms from the Jap. and were still, in some

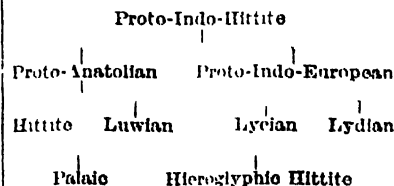
cases, commanded by Jap. officers and gendarmes. In Tongking the disorganised administration resulted in floods and famine. In Cochin China most of the inhab. wished their country to remain independent of Annam and Tongking or the Viet Nam Republic and the Fr. to continue the work they had begun. In Cambodia and Laos the Fr. were received back again with open arms by sovereigns and people, who had remained staunch friends of France throughout the war. As regards Tongking and Annam, a provisional agreement was concluded (March 1946) with the Ho Chi Minh Gov., ensuring the pacific return of the Fr. troops in the larger tns. and maintaining the autonomy of those countries within the Indo-Chinese Federation and the Fr. Union (see FRANCE, *Constitution*). There was, however, bitter fighting between Viet Nam and the Fr. throughout most of 1947. Offers of settlement made by the Fr. (Sept. 1947) were rejected, and military operations began in Tongking (Oct.). Further attempts to reach a settlement concerning the defence and foreign relations of the newly-formed Federation of Indo-China were unsuccessful (1948). The Viet Nam republic, while not objecting to membership of the Fr. Union, looked for the autonomy characteristic of membership of the Brit. Commonwealth. See P. Doumer, *L'Indo-Chine Française*, 1915; M. Happ, *L'Immense Indo-Chine*, 1928; T. E. Ems, *French Policy and Developments in Indo-China*, 1936; S. Levi, *Indo-China*, 1931; Virginia Thompson, *French Indo-China*, 1937; N. Smith, *Burma Road*, 1940.

**Indo-European Languages.** This term, first employed (in 1813) by the gifted physician, Egyptologist and philologist, Dr. Thomas Young, of Emanuel College, Cambridge, is to be preferred to 'Indo-Germanic,' as it is called by patriotic Ger. philologists, or Aryan (so termed by super-patriotic Gers.), which is now technically reserved for the Indo-Aryan branch (see below). This family comprises most of the languages spoken in Europe and some of those of Asia, particularly the Indian sub-continent. The speakers of these languages have for many centuries been the leaders in the hist. of the world; their literatures are amongst the greatest. The development of these languages has been the most varied and the most rich. The languages belonging to the three main branches of this family, Germanic, Romance, and Slavonic, nowadays are spoken by c. 325 million people, c. 250 million and c. 200 million respectively. On the basis of a great deal of evidence, philologists have succeeded in constructing the Proto-Indo-European language and a 'family-tree' of the well-attested Indo-European languages, although not all the scholars agree as to the place in which one or another of these languages (e.g. Hittite or Armenian) should be placed.

The main features of the I.-E. L., at least in their early stages, are as follows: A word normally consists of three elements, root, prefix, and ending; the grammatical relationships are generally expressed by means of inflection; and the

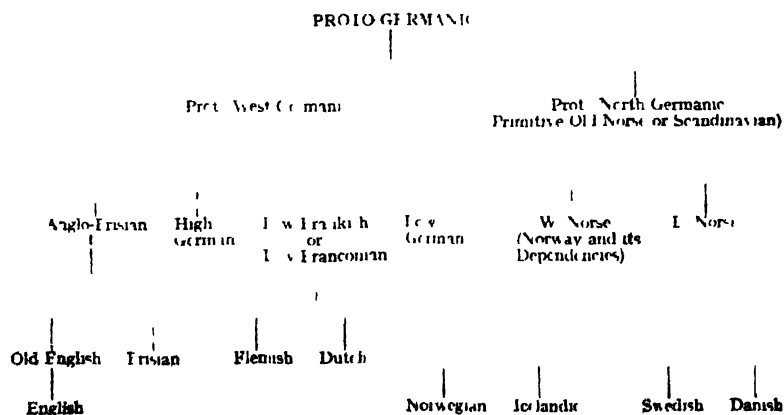
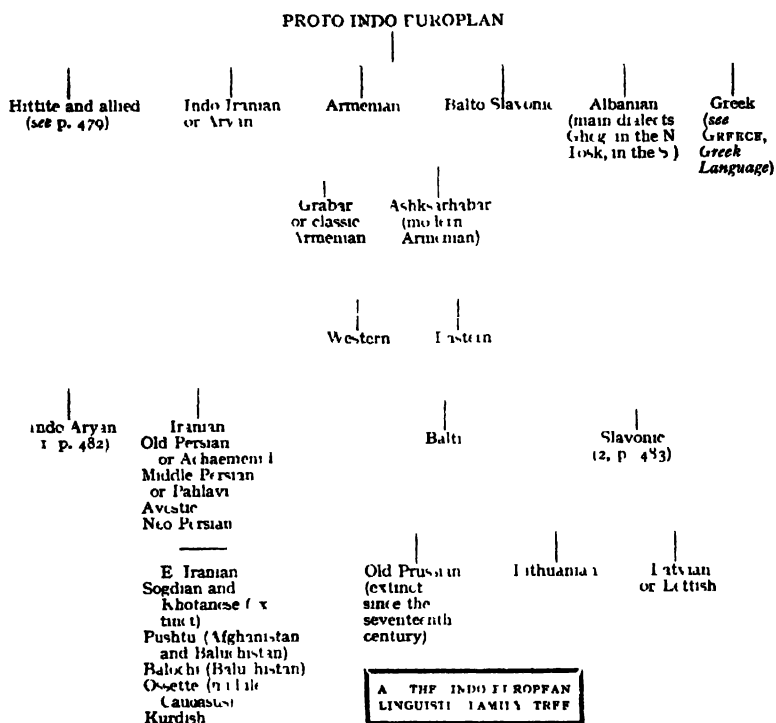
main morphological features are reduplication of the verb-stem and the vowel-gradation, known by its Ger. term *Ablaut*. The Indo-European family falls into two sub-families, torned from the word 100, in Latin *centum* (pron. *kentum*), and in Zend, *satem*. These two groups are distinguished from one another by their treatment of certain guttural sounds. The *centum* group (Gk., Lat., Celtic, Germanic) has *k*, *g*, *kh*, and *gh*, where the *satem* group (Indo-Iranian, Armenian, Balto-Slavonic, Albanian) generally has *s*, *z*, *k* or *g* or *h*.

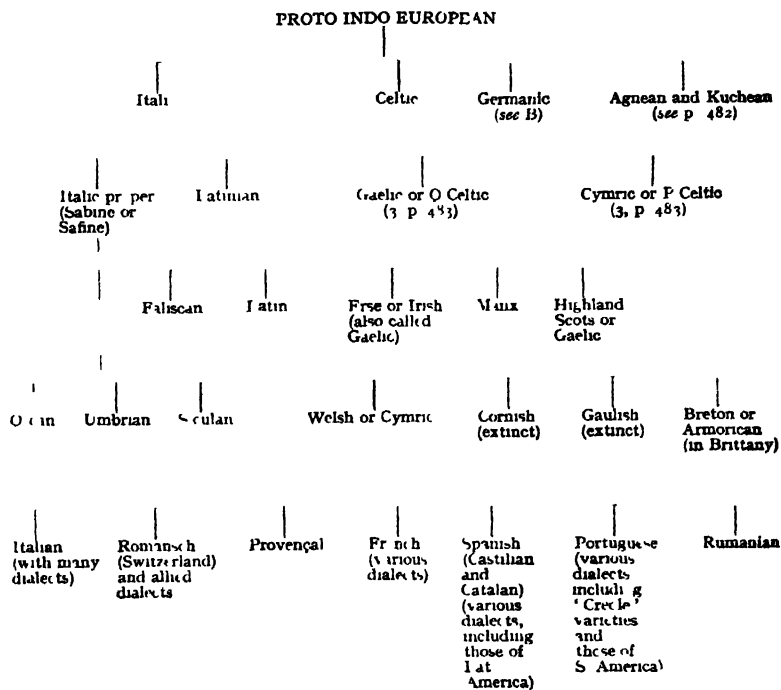
One of the many vexed problems of the Indo-European languages is that of Hittite. The Hittites inhabited Asia Minor and N. Syria from the third to the first millennia B.C., and during the fourteenth and thirteenth centuries B.C. constituted one of the chief empires of the Near East. The most important stage in the recovery of the long forgotten empire of the Hittites was the discovery in 1906-07, at Bogaz Koy (Boghaz Keui) the anct. Hattushash, cap. of the empire, of the rich royal archives containing over 20,000 documents written in cuneiform (see CUNEIFORM WRITING) on clay tablets. Some of these documents are written in Accadian language, but the bulk is written in Hittite. This language has been recognised as an Indo-European speech since its decipherment in 1915 by the Czech scholar Bedřich Hrozný. The eminent Hittitologist Emil Forrer, on the basis of 'archaisms' in Hittite as compared with other anct. I.-E. L. has suggested, since 1921, that Hittite broke away from the parent speech before any of the other known I.-E. L. The Amer. linguist E. H. Sturtevant accepted and developed this suggestion. According to him, Hittite and 'Proto-Indo-European' are both descended from an earlier language, by him termed 'Proto-Indo-Hittite'. Besides, in Sturtevant's opinion five other languages of Asia Minor, known from various inscriptions or from citations in the Hittite documents, are closely related with Hittite. Apparently all these early Anatolian languages preserve certain features that have been lost in all the I.-E. L. Sturtevant, thus, suggests the following family tree.



It may be noted that until recently Lycian and Lydian were considered as non-I.-E. L.

Recent excavations and studies have recovered other forgotten languages belonging to the Indo-European linguistic family. In the first seven or eight centuries of the Christian Era, Chinese





## PROTO GERMANIC

Germanic  
Gothic

B FAMILY TREE OF THE  
GERMANIC LANGUAGES

Vandalic  
(?)

Visigothic  
or W Gothic  
(see under GOTHIC LANGUAGE AND SCRIPT)

Ostrogothic  
or E Gothic

Eastern Turkestan (now called Sinkiang) almost wholly a sandy waste to-day was 'a land of smiling cities with rich sanctuaries and monasteries stocked with magnificent libraries.' This anct. 'melting pot' of peoples of quite different forms of speech, script and religion, is now inhabited by a sparse pop. mainly of Turkish tongue and Muslim religion. MSS. discovered since 1890 revealed that in the latter part of the first millennium A.D., the pop. living between the R. Tarim and the Tien-shan Mts., including the ters. of Turfan, Qara-hahr and Kucha, spoke a language belonging to the *centum* group of the Indo-European family. This language, however, presents sev. features not paralleled in the other I.-E. L., and its relationship with the other groups has not yet been sufficiently cleared up. It was assumed, at first, that the new language was the speech of anct. Tokharistan and it was, therefore, termed Tokharian, but apparently anct. Tokharian was a non-Indo-European form of speech. Besides the new language is not uniform; two dialects or languages can be distinguished, which nowadays are termed *Agnean* and *Kuchean*. Other newly recovered languages preserved in MSS. discovered in Turkestan, are *Khotanese*, which was spoken in the anct. kingdom of Khotan, and is now known to have been the easternmost Middle Iranian (or Persian) form of speech; and *Soghan*, another E. dialect of Middle Iranian, which was widely used in Central Asia for many centuries, and particularly in the second half of the first millennium A.D.

The Indo-European 'family-tree' with particular reference to the Italic and Celtic languages is printed on p. 480, with the 'family-tree' of the Germanic languages. Various detailed questions are not taken into consideration; amongst others, the problem of the Thracio-Phrygian group of languages, which certainly were Indo-European, but too little of them is known to give them the exact place in the 'family-tree.' Also very little is known about the linguistic affiliations of anct. Illyrian, which was spoken on the E. coast of the Adriatic Sea: the Messapii, who inhabited in pre-Rom. times the E. region now known as Apulia; the Piceni, who lived on the central It. coast of the Adriatic, and the Veneti, who inhabited the N.W. coast of the same sea, apparently belonged to the same linguistic group as the Illyrians. Some scholars consider Armenian and Albanian, which apparently are isolated independent branches of the Indo-European family, as remnants of a large group, termed Thracio-Illyrian, including anct. Thracian, Illyrian and allied languages, anct. Phrygian, and Scythian, to the N. of the Black sea.

The following are a few major points to be considered in connection with the Indo-European 'family-tree.'

(1) The linguistic problems of India are rather complicated. Her numerous languages and dialects belong to at least three main linguistic families (without taking account of the still undeciphered written documents of the pre-Indo-

European people of the Indus Valley). Indeed, besides the Indo-European languages, there are various Dravidian languages (see under LINGUISTIC FAMILIES) and Kolarian or Munda languages spoken over the whole of Central India, which are considered as having the Austro-Asiatic common substratum. Even the Indo-Aryan branch is the most numerous and complicated of all the Indo-European branches. In the last centuries B.C., Sanskrit, which was originally a refined form of the language of the 'Madhyadesa' (the Indian homeland), developed into an artificial, literary language, the language of the Brahman civilisation. For many centuries it was the exclusive literary language of N. India. The Muslim invasion of India after A.D. 1000, followed by the final conquest, towards the end of the twelfth century, extinguished the Hindu political power (revived only in 1917) in N. India, and brought into use the Arabic-Persian script and the Persian influence on the Indian languages. Roughly about this time, the Indian Prakrits or vernaculars began to develop into literary languages. The most important of them is W. Hindi (71 million speakers); one of its various dialects, Hindustani, which was primarily the language of the N. Doab, was carried over the whole of India by the Moslems. The literary Hindustani became the modern literary language of India; early in the seventeenth century it was already known in England that Hindustani was the *lingua franca* of India: it is believed that nowadays it is spoken by some 65,000,000 people, and it is understood by nearly 150,000,000 people. One form, Urdu, which makes a free use of Persian and Arabic words, and employs the Persian-Arabic script, is used chiefly by Moslems and has become the official language of the new State of Pakistan. The other form, Hindi, is free from Persianisation, and owes more to Sanskrit: it is used by Hindus and is usually printed in the Deva-nagari character, the script of Sanskrit.

Hindi (21,000,000 speakers) has three main dialects, Ewadihi, Bagheli, and Chhattisgarhi. The chief languages of the central group are: (1) Punjabi (c. 17,000,000 speakers) also spoken by the Brit. Sikh soldiers. The dialects are W. Punjabi or Lahnda, c. 7,000,000 speakers with twenty-two dialects. (2) Sindhi c. 3,500,000, with a dozen dialects. (3) Rajasthani, c. 18,500,000 with the dialects of Malvi (1,000,000), Marwari, and many others. (4) Gujarati, spoken by c. 11,000,000 people. (5) Kashmiri (c. 2,000,000 speakers whose main dialect is Kachawari), is the most north-westerly language of this branch. Pahari ('of, or belonging to, the mountains') is spoken by c. 2,500,000 people in *Sapa Jalaksha*, that is the lower ranges of the Himalaya, from Nepal in the E. to Bhadravai in the W.: it can be classified into E. central and W. Pahari, the last having many dialects, such as Mandi, Mirmauri, Jaunsari, Chameali, Kuthali, Kulai, etc. More important is the eastern group of the Indo-Aryan languages: Bengali



(divided into sev. dialects) is spoken by c. 50,000,000 people; Bihari (main dialects: Maithili or Tirhut, Magahi and Bhojpuri) is spoken by c. 40,000,000 people; Oriya, comprising many dialects, is spoken by c. 10,000,000 people; and Assamese, the most E. Indo-Aryan language, is spoken by c. 2,000,000 people.

Only three Indo-Aryan languages are spoken in S. India, the most important of them being Marathi with c. 19,000,000 speakers; interesting is Konkani, a Marathi speech, over 1,500,000, spoken in the Portuguese colony of Goa and surrounding dists., and mainly written in Rom. characters as adapted by the Portuguese priests; Saurashtra is spoken by c. 125,000 people, mainly in Madura and Madras; and Hindustani is mainly spoken by the Moslems. Sinhalese (the language of Ceylon), spoken by c. 4,000,000 people, must also be mentioned: although there are still some who maintain that it is essentially a Dravidian language, it is generally admitted by serious scholars that it is an Indo-Aryan speech strongly influenced by Dravidian. Finally, Romani, the language of the gypsies, in various parts of Europe and Asia, comprising numerous dialects strongly influenced by local languages, is generally considered as an Indo-Aryan language.

(2) *Slavonic*. The earliest, extant Old Slavonic documents belong to the end of the tenth and to the eleventh centuries A.D. They are couched in a language termed 'Ecclesiastical Slavonic,' or 'Old Church Slavonic,' or else 'Pannonian Slavonic,' or 'Old Bulgarian,' and are written in the Glagolitic or the Cyrillic scripts (see under ALPHABET). The modern Slavonic languages can be divided into three geographical groups: Eastern (Russian, White Russian, and Ukrainian), Western (Polish, Czech or Bohemian, Slovak, Wend or Serbian, and Lusatian), and Southern (Bulgarian, Serbo-Croatian, and Slovene).

(3) *Celtic*. The Celtic branch is commonly divided into two groups of languages, the Gaelic and the Gynric, which, respectively, are also termed Q-Celtic and P-Celtic: In the former group, the 'Proto-Celtic' combination of a guttural with a *w*-sound (like *kw* or *qu*) remains *kw* or *q* or changes to *c*; in the latter, it changes into *p* or *pu*.

See Meyer-Lübke, *Grammatik der romanischen Sprachen*, 1890-1902; K. Brugman, *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen* (2nd ed.), 1897-1916; *Kurze vergleichende Grammatik der indogermanischen Sprachen*, 1904; H. Hirt, *Die Indogermanen*, 1905; H. Pedersen, *Vergleichende Grammatik der keltischen Sprachen*, 1909-1913; J. Schramm, *Einführung in das Studium der indogermanischen Sprachwissenschaft* (trans. from Dutch), 1921; A. Meillet, *Le slave commun*, 1924, *Grammaire du vieux-perse* (2nd ed.), 1931, and *Introduction à l'étude comparative des langues indoeuropéennes* (7th ed.), 1934; K. Sandfeld, *Linguistique balkanique*, etc., 1930; E. Bourciez, *Éléments de linguistique romane*, 1930; E. Hirt, *Handbuch der Germanis-*

*chen*, 1931; B. F. C. Atkinson, *The Greek Language* (2nd ed.), 1933; in this collection: A. Ewert, *The French Language*; W. E. Collinson and R. Priebsch, *The German Language*; G. E. K. Brannholtz and J. F. Mountford, *The Latin Language*. A. C. Baugh, *A History of the English Language*, 1935; E. Prokosch, *A Comparative Germanic Grammar*, 1939; J. Whatmough, *κελτικά: being Prolegomena to a Study of the Dialects of Ancient Gaul*, 1945.

Indo-Germanic Languages, see INDO-EUROPEAN LANGUAGES.

Indonesia (Indo- and the Gk. word *νησος*, an island) is a term sometimes used to designate the E. Indies, comprising Borneo, Indo-China, Java, and the Dutch E. Indies, Johore, New Guinea, Malay, Penang, Perak, Philippine Is., Singapore, Sumatra, and Tongking. Archaeological research in I. has been carried out under both Eng. and Dutch supervision. In the Malay Peninsula stone axe-heads of neolithic culture have been discovered, but no knives or spear-heads. These instruments were probably made of bamboo, owing to the lack of suitable stone, and bamboo spear-heads are still in use among the Malays to this day. The exploration of Malayan caves has revealed, often within about 4 ft. of the surface, parts of skeletons—remains of feasts, all seemingly of extant animals—cord-marked pottery, and ground stone implements. Archaeological research has estab. a considerable similarity between these remains and those found in Indo-China. Bronze adze-heads have been discovered in Negri Sembilan, and anc. iron tools, probably mining implements, are also found, but are extremely rare. Indonesian art is practically restricted to design, and among the is. very little sculpture remains, while what there is shows the religious influence of Indian art. Design has found expression in the patterns with which bamboo combs are decorated and also the belts worn by the women, who attribute to them a magical significance. The pottery also is rudely decorated. Gold and silver filigree work, of extreme intricacy, is made in Malay, Upper Perak, and the Patani States. Filigree work is used to ornament dagger-hilts, rings, brooches, buttons, kris-sheaths, pendants, ear-studs, and beads, being often coloured a dark red or deep yellow. Button-making is a craft widely practised in I. The buttons are made of silver on which a design has been indented. The background is then filled in with an extremely durable black enamel, which, after firing and finishing, will neither crack nor bend. The enamelling is known as niello ware. See also INDONESIA (DUTCH); and BORNEO; DUTCH EAST INDIES; JAVA; MADURA; SUMATRA, etc.

Indonesia (Dutch), the Netherlands E. Indies considered in the light of the independence movement, more particularly associated with Java and Sumatra as the strongholds of Indonesian republicanism. A widespread movement of local nationalism was encouraged, especially in Java, by Japan during the Second World War,

when her defeat became inevitable. This movement made further progress in 1945 taking advantage of the time lag between the sudden Jap. surrender and the arrival of such allied troops as could be made available to disarm the Jap. forces of occupation. Having obtained arms and assistance from the Jap. garrisons the Javanese proclaimed an independent gov. Guerrilla fighting broke out in Java and in Feb. 1946 the Netherlands Gov. declared its readiness to recognise Indonesian independence and to further the estab. of an Indonesian state possessed of full partnership rights within the Netherlands kingdom. The Dutch Gov. also declared that the new 'Indonesian Commonwealth' should manage its domestic affairs in complete freedom through its own cabinet and a democratic legislative body in which Indonesians would hold a majority. Formal discussions initiated in Java, through the mediation of Sir Archibald Clark Kerr, were continued in Holland, where, however, they made next to no progress. Law and order were estab. in Java, however, as the number of places taken over by Brit. and Dutch troops increased. The ters. of the 'Great East', Borneo, Bangka and Billiton were handed back to the Dutch E. Indies administration (July 13, 1946) and a conference was convened by Lieut. Governor General van Mook (July 16) to enable the ls. outside Java and Sumatra to discuss their future relationship with the Netherlands Gov., the real purpose of the conference being to check the Republicans' claim to speak for the whole of 'Indonesia'. Resolutions, however, were passed in favour of a federation of the whole of Dutch Indonesia with the maximum of autonomy for each of the four constituent states—Java, Sumatra, Borneo, and the Great East. In the meantime Dutch Indonesian negotiations had been long suspended but in Nov. the two sides agreed on terms of settlement embodied in the 'Cheribon Draft Agreement', a political accord as it was described by the Dutch Gov., which was initiated by both sides on Nov. 15. This agreement for the formation of the 'United States of Indonesia' held out an illusory promise of a new era of peace and co-operation, for there were those on both sides who were opposed to any compromise. In Holland, e.g. the Catholic and Calvinist parties were strongly opposed to any concession to the claims of a secular Asiatic nationalism. The Agreement was, nevertheless, signed by both sides on March 25, 1947, and a truce agreement which had been concluded in Oct. 1946 was formally implemented by a cease-fire order, which however, did not stop acts of violence by separatist movements in W. and N.W. Java. On May 27, 1947, the Dutch commissioner-general in Java sent a Note to the Indonesian Republican Gov. demanding that the gov. be reconstructed to form a central apparatus of the future Federation and that organs be created for co-operation with the Dutch Gov. in regulation of foreign relations and economic questions and the control of

relations with all parts of Indonesia not belonging to the republic. The republican gov. agreed to co-operate but blamed the Dutch Gov. for the continuation of hostilities. The Indonesian premier (Sjahrir) was unable to get the support of his own Socialist party for the acceptance of these proposals and resigned. The next day President Soekarno announced his acceptance of the general lines of the Dutch Note and the new premier (Sjahrifuddin) also agreed to the proposals.

But the republicans failed to keep law and order in the areas nominally under their control with the result that Dutch troops then occupied all republican buildings and public services in Batavia. Van Mook's defence of this action was that the Republicans were unable or unwilling to honour either the truce or the agreement or to liberate the 100,000 persons (Chinese, Indians, Dutch, etc.) still gathered in concentration camps. The Dutch forces made rapid progress in occupying areas in N.E., and central Java, and on July 31 President Soekarno broadcast an appeal to solve the problem without war saying that the republican gov. were prepared to put their case before the United Nations. On the request of the Indian Gov. through Paudyal Nehru, the Indonesian case was taken up by the Security Council (July 31) and a United Nations' committee was sent out to report. The committee put forward proposals (Dec. 2) but these were rejected by both sides. During 1948 it continued to be the aim of the Dutch to create a 'United States of Indonesia' that would be both stable and independent, and to that end they made plans for setting up an appropriate federal constitution. But they could not secure the co-operation of the republicans, nor did any greater measure of success attend the efforts of the United Nations' Good Offices Committee, which remained in Indonesia for many months. The Dutch Gov. contended that they had suffered provocation at the hands of the republicans and that the subversive forces inside the republic would, unless promptly suppressed, endanger the whole foundation of the United States of Indonesia. This contention, however, gained no support from the United Nations any more than did the Dutch offer to seek a ruling of the Court of International Justice on the Security Council's competence to intervene in what the Dutch regarded as a domestic dispute. No compromise seemed possible, for the Dutch case and that of the republicans were poles asunder: the Dutch argued that the development of the Indonesian Federation was threatened by the unwillingness of the Republic to join with the other Indonesian states as an equal partner, whereas the republicans, as always, wanted a unitary state under republican control. This forced the Dutch gov. to press for a speedy solution of the problem and, accordingly, on Dec. 19 the Dutch, in violation of the truce which had been arranged by the Good Offices Committee, resumed military action against republican ter. at Jakarta

was quickly captured by airborne forces and Dr. Soekarno and sev. republican ministers were arrested. By Dec. 30 all major tns. were in Dutch hands, the whole operation having been cleverly planned and executed. These military operations were, however, strongly condemned by most members of the United Nations Security Council. In Jan. 1949, the Gov. of India invited the govs. of thirteen Asian countries to a conference in Delhi to consider the Indonesian problem—Pandit Nehru describing Dutch action there as 'unabashed aggression.' The conference, held on Jan. 23, made firm but moderate recommendations to the Security Council of the United Nations, among them being that all Dutch troops should be withdrawn from the whole of I. by a date to be determined by a United Nations' authority and that power over the whole of I. should be completely transferred by Jan. 1, 1950 to the United States of Indonesia, whose relationship with the Netherlands should be settled by negotiations between the two parties. After discussions lasting sev. weeks, a preliminary agreement was reached (May 8) between the Dutch and the Indonesian Republican delegations which met at Batavia under the auspices of the United Nations committee for Indonesia. The proposals under consideration were the return of the Republican gov. to Jogyakarta, the cessation of all guerilla warfare, and a round-table conference at the Hague. This compromise seemed to be the first step on the road to a settlement of the Indonesian question.

**Indoor Gardening**, see UNDER WINDOW GARDENING.

**Indore**, native state of Central India in the dominions of the Maharajah of Holkar. It covers an area of 9900 sq. m., and is bordered S. and W. by the ters. of the Bombay Presidency, and N. and E. by those of Scindia and the rajahships of Dhar and Dewas. It is traversed in the S. by the Satpura range, and in the N. by the Vindhya Mts., and between these are the dists. watered by the Nerbudda. There are some fertile plains, and most of the country is well wooded. The prevailing religion is Mohammedan. The chief products are wheat, timber, tobacco, raw cotton, and opium. The chief tn. and cap. is Indore, situated in a fine undulating plain. It has a new first-grade college, a Sanskrit College, sev. high schools, and a scheme for compulsory primary education is estab. A Botanical Institute for the improvement of cotton has been estab., and a number of spinning and weaving mills. Other places of note are the old garrison tns. of Mhan and Melhidpur, Mhoyaur, and Mandesar, and the ruined city of Mandu. The present Maharajah, who succeeded to the throne in 1926, on the abdication of his father, Maharajah Tukoji Rao III., was educated at an Eng. school and Oxford. He married, in 1924, the daughter of the Junior Chief of Kagal. The maharajahs have shown great loyalty to Britain, and during the two world wars I. gave all the help it could to the Brit. Gov., both in money and men,

who fought on many fronts. There is a state railway, with the prin. station at Indore tn., and sev. other railways cross the country. State savings banks have been introduced. The ann. revenue is £900,000. Pop. (1941) 1,514,000.

**Indorsement**, writing on the back of an instrument something relative to and affecting the transaction evidenced by the instrument, e.g. the l. of a bill of exchange or cheque payable to order operates to transfer the right to payment to the indorsee or person to whom the indorser hands the bill or cheque. The l. of a negotiable instrument may be in 'blank,' i.e. where the name of the indorser only is written on the instrument, the effect being that the instrument becomes payable to bearer; or 'conditional,' i.e. the property in the instrument is transferred subject to some contingency being fulfilled; or 'qualified,' i.e. which enlarges, restricts, or otherwise qualifies the liability of the indorser; or 'special,' where the name of the indorsee is inserted; or 'restrictive,' i.e. it restricts the negotiability of the instrument to some particular purpose or person.

**Indra**, in Indian mythology, the ruler of the bright firmament who stands at the head of the heaven of the gods. In Vedic poetry he is represented as performing wonderful deeds for the benefit of good men, at the same time possessing all the attributes of a warlike god.

**Indre**, dept. of Central France, lying S. of the dept. of Cher, and covering an area of 2661 sq. m. It was formed in 1790 from parts of the old provs. of Berry, Orléannais, Marche, and Touraine, and is named from the riv. flowing through it. The surface consists of a large plateau divided into three dists., viz. the Bois-chant, a well-wooded plain abounding in marshes in the S., comprising nearly seven-tenths of the entire area; the Champagne, a fertile dist. in the N., producing cereal crops; and the Breune in the W., between the Cher and Creuse, a region of moors, marshes, and ponds, formerly unhealthy, but now considerably improved by means of drainage and afforestation. The Champagne dist. affords excellent pasturage for sheep, which produce first-rate wool. The chief products are chestnuts, grain, the vine, sugar-beet, wheat, oats, potatoes, turnips, etc. Much poultry is also reared. Amongst the prin. manufs. are paper, leather, cloth, and pottery. The dept. is divided into the arrons. of Châteauroux, Le Blanc, Le Châtre, and Issoudun. Châteauroux is the chief tn. Pop. 252,000.

**Indre-et-Loire**, dept. of Central France, comprising small parts of Anjou, Poitou, and Orléannais, and nearly the whole of the old prov. of Touraine. Area 2811 sq. m. It is drained by the Loire and its tributaries, the chief of which are the Indre, Cher, and Vienne. The chief dists. of the dept. are the Gâtine, a plateau region, diversified by woods and plains, to the N. of the Loire; the Champagne, a chain of vine-clad slopes between the Cher and the Indre; the Veron, a dist. of

orchards and vines between the Loire and Vienne; the hilly and unproductive plateau of Ste. Maure; and the marshy ter. of the Breune. The chief products are grapes, apples, beetroot, grain, and hemp, and there are manufs. of paper, silk, rope, and bar-iron. Metallurgic monuments are numerous in the dept. The dept. is divided into the arrons. of Tours, Chinon, and Loches. The chief tn. is Tours. Pop. 319,600.

**Indri** (*Indris brevicaudata*), sub-family of the Lemuridae, large monkey-like lemurs inhabiting Madagascar, especially the E. coast forests, first discovered 1780. They are black and white in colour, of diurnal habits, and live chiefly on fruit. See LEMUR.

**Induction**, Eng. Church ceremony for giving possession of a benefice to a clergyman. The I. is performed after a mandate from the bishop to the archdeacon (or dean and chapter). The inductor takes the clergyman's hand and lays it on the key of the church door. The clergyman is then admitted, and tolls a bell as a public notification to his parishioners. The incumbent's possession is completed by 'reading himself in,' reading the Thirty-nine Articles, and making formal vows to accept them and conform to the rules of the Church. Scottish ministers are ordained by the Presbytery ceremony. The ceremony which includes a laying on of hands, is conducted by the 'Moderator,' the clergyman appointed to look after the church during the interregnum or vacancy.

**Induction**, in logic, the process of real inference, or the proceeding from the known to the unknown. This operation of *discovering and proving* general propositions is contrasted with deduction, which is the method of *applying* general propositions once discovered to such particular cases as are considered to be within the scope of the estab. propositions. The great exponent of deductive principles, Aristotle, neglected I., and only identified it with a complete enumeration of facts. Bacon's *Novum Organum* contains little true I., though it contains directions for drawing up the various kinds of lists of instances. Whewell's *Philosophy of the Inductive Sciences* (1840) marks a distinct advance, and shows a due appreciation of the cardinal point neglected by Bacon—the function of theorising in inductive research. He shows that science advances only in so far as the mind of the inquirer is able to suggest organising ideas whereby experiments and observations are made to dovetail into an intelligible system. J. S. Mill in his *System of Logic, ratiocinative and inductive* (1843) ignores the constitutive work of the mind, and regards knowledge as the merely passive reception of impressions. Recent advances in mental science have estab. the great importance of I., and clearly show that the most valuable faculty in scientific inquiry is that of suggesting new and valuable hypotheses. See also LOGIC. See J. S. Mill (above) and A. Lalande, *Les Théories de l'induction et de l'expérimentation*, 1929.

**Induction and Induction Coil**, see ELECTRICITY—*Electro-Magnetic Induction*.

**Induction Furnace**, see under METALLURGY (METALLURGICAL FURNACES).

**Indulgence**. This term, in Rom. Catholic theology, signifies the remission of the temporal penalty of sin, granted to a repentant sinner by Church authority. The I., however, is never considered a sacramental remission of the sin itself. Although the first recorded instance of the use of the word indulgence was in the eleventh century by Alexander II., the institution was found in full development during the wars of the Crusades, the serving in which was accounted an equivalent substitute for penance, provided always the service was from motives of devotion and not from mere greed or love of glory. Later, military service as a condition for Is. was replaced by pilgrimages to certain great shrines. I.s may be given by the Pope, and by primates and bishops within the limits of their jurisdiction. In modern times they are usually attached to works of devotion or good works of any kind in the form of remission of part or all of what would have been the old canonical penance for sin.

**Indulgence, The Declaration of**, issued by James II. of Great Britain in 1687. It had for its ostensible object the suspension of all laws tending to force the consciences of the king's subjects—its real object being to relieve the Rom. Catholics. It was very unpopular, and the culminating point of the universal dissatisfaction was testified in the refusal of the seven bishops to order their clergy to read it aloud from their pulpits.

**Indus**, S. constellation between Grus and Pavo, first noticed by Bayer in his *Uranometria*, pub. in 1603. The chief star (of 3.2 magnitude) gives a solar spectrum. Near by are the clusters of Tucana and Telescopium.

**Indus**, great riv. of N. India, rising in the Kailas mt. group, near the sources of the Brahmaputra, Sutlej, and Gogra. For upwards of 500 m. it flows in a N.W. direction; at first by the foot of the Himalayas on the Tibet plateau, then through Kashmir, between the chains of Ladakh in the N., and of Zaskar in the S., amid mt. scenery unmatched by any in the world. Here it receives the waters of the Shyok, the largest trib. of this its upper course. As it leaves Kashmir to enter the Punjab it turns to the S.W., and emerging from the mt. regions is joined at Attock by the Kabul R., from Afghanistan. From this confluence it continues to run in a S.W. direction for another 1000 m. till it enters the Indian Ocean. About the middle of this lower course through the plains it receives one great affluent, composed of the united waters of the Sutlej, Chenab, Ravi and Jhelum, which, with the I. itself make the Five Rivers or Punjab. It loses much water from passing through desert regions, but is navigable up to Attock at all seasons. During the melting of the mt. snows, from May to August, destructive floods often occur. It is spanned by sev. bridges, even in its upper mt. courses—the iron railway bridge at Attock and the cantilever 'Landsdowne Bridge' at Sukkur being triumphs of

engineering skill. The total length of the I. is nearly 2000 m., its minimum width is 500 ft., and depth 9 to 10 ft. See Hall, *The Indus Delta Country*, 1894. See also INDUS VALLEY CULTURE.

**Industrial Accidents.** According to the Workmen's Compensation Act of 1923 industrial accidents are 'accidents rising out of or in course of employment.' Such accidents are classified according to their severity whether the results are fatal, and if non-fatal whether permanent or temporary. A table of frequency rates for 779 factories employing 820,525 persons (or 12.8 per cent of all Brit. factory employees) gives a rate of 2.27 for all the listed industries during 1917 and is useful as a guide to the industries producing most accidents. The tables show the percentage relationships of totals of accidents for 1942 and 1947 to the accidents in 1937.

ciency (1921); H. W. Heinrich, *Industrial Accident Prevention* (1931); *Annual Report of the Chief Inspector of Factories for 1947*. Cmd. 7621. H.M.S.O. 1949.

**Industrial Court**, permanent court set up as a result of the Whitley Committee of 1918 in which disputes between workmen and employers can be investigated and referred for arbitration or other solution in the event of no mutual agreement.

**Industrial Design**, Council of, organisation set up in 1941 whose purpose is to promote by all practicable means the improvement of Design in the products of Brit. industry. It is financed by the Brit. Gov. The word design is taken to cover the many processes in the planning of goods for hand production or, more usually, for quantity production by machine and to include structure, texture, form, and decoration. Good design is

Number of Fatal Accidents

Year	Factories	Docks and Warehouses	Building Operations	Works of Engineering Construction	TOTAL	Total per cent of 1937
1937	716	105	182	—	1,003	100
1942	991	124	219	29	1,363	136
1947	516	70	218	35	839	84

Number of Non-Fatal Accidents

Year	Factories	Docks and Warehouses	Building Operations	Works of Engineering Construction	TOTAL	Total per cent of 1937
1937	176,013	8,303	8,223	—	192,539	100
1942	295,613	8,308	7,758	1,558	313,267	163
1947	185,231	7,819	8,251	1,096	202,397	105

Typical figures of direct causes of accidents in Brit. factories are as follows (percentage of total accidents for 1947): power-driven machinery, 16.7; molten metal or other hot or corrosive substances, 4.4; hand tools, 9.9; struck by falling body, 8.8; persons falling 12.0; stepping on or striking against objects, 7.0; handling goods, 29.2; other causes 12.0. These figures show that what are known as non-machinery accidents accounted for 83.3 of the total.

An important statutory reform in the law of Compensation for I. A. was introduced in 1946 when on July 26 the royal assent was given to the National Insurance (Industrial Injuries) Bill, framed by the Churchill Gov. to place compensation for industrial accidents on the basis of a contributory social service. Under this Act the basic rate for injury benefit for 100 per cent disablement is 45s. with the right to claim an addition of 25 per cent to his medical assessment if the worker can show that by reason of his injury he is no longer able to fill his previous occupation or be retrained to fill an occupation of an equivalent standard.

**Consult:** The Human Factor and Industrial Accidents' (*International Labour Review*, 1936); *Industrial Fatigue and Effi-*

taken as meaning both practical convenience and beauty. The main functions of the council are to help industries to set up design centres which operate on a co-operative basis, supported by contributions from the firms in each industry, with the addition of a grant from the Exchequer, to hold and take part in exhibitions, to publish good design both independently and in collaboration with those adult education and voluntary associations which are concerned with design appreciation; to co-operate with education authorities and others in the training of industrial designers; to advise gov. depts. on the design of goods which they purchase; and to be a centre of advice and information on all matters of industrial design for industry, gov. depts., and other interested bodies. The industrial div. of the council offers manufacturers, designers, and interested bodies a general advisory service or the promotion of improved industrial design; the information div. includes sections which offer specific services to educational bodies of every kind, to industry, and to the public. The offices are at Tilbury House, Petty France, London, S.W. 1.

**Industrial Diamonds**, see under DIAMOND.

**Industrial Diseases,** see INDUSTRIAL WELFARE AND OCCUPATIONAL DISEASES.

**Industrial Hygiene,** see under HYGIENE, and INDUSTRIAL WELFARE.

**Industrial Insurance.** In its beginning I. I. consisted of 'burial societies' through which the working classes, by payment of small weekly sums to a mutual society, received sufficient money to defray funeral expenses when the need arose. From these comparatively obscure societies the great business of I. I. of today developed. A demand for whole-life insurance followed the modest requirements of 'burial funds,' and this demand was satisfied by the innovation of premiums which could be paid weekly or monthly and the issuing of policies for smaller assured sums. These premiums are collected at the houses of the policy-holders, and it is this 'collection,' coupled with the weekly or monthly payments, which distinguishes I. I. from ordinary insurance, where premiums are usually paid annually for larger assured sums. The official limit which marks insurance as industrial is that the premiums must be collected at intervals of less than two months, while the sum assured must be less than £1000. This demarcation was embodied in the Act of 1923. Associated with the I. I. companies are the Friendly Societies: the administration of both is governed by the statutory measures of the same Act, and the Industrial Assurance and Friendly Societies Act, 1948. All such companies must be registered and pay a substantial deposit to the Chief Registrar, who has authority to hear and judge disputes arising out of claims, criticise balance-sheets, hold inspections, reject unsound valuations, and even direct the winding up of unsatisfactory companies. The Industrial Assurance Act of 1923 was further extended by the I. I. and Friendly Societies Act of 1929 which is concerned with the computation of the minimum sum payable at death under the age of ten, and (2) the validation of the 'life of another' endowment insurance. But important amendments of the law were made by the Act of 1948. This Act (section 6) contains a prohibition of insuring money to be paid on the death of a child under ten or, in other words, it prohibits insuring so as to render any sum payable under the insurance on the death of any person at any time before he or she attains the age of ten years (otherwise than by repayment of the whole or any part of premiums paid). This prohibition also applies to registered or unregistered friendly societies or trade unions. By section 2 power is given to insure the life of a parent or grandparent for not more than £20, but only in respect of a person who at the time of the proposal is ordinarily resident in Great Britain; and the Act prohibits alienation of such insurances. The former power conferred on I. I. companies (and Friendly Societies) to insure money for funeral expenses is also abrogated by the Act; while, by another provision, liability on policies will not be restricted on grounds of health of the person upon whose life the assurance is taken out, if the proposer

knowledge and belief has been properly disclosed.

Like many other Brit. institutions, industrial life insurance has completely changed its purpose during its existence, besides being radically reformed. It began, as implied above, in the desire of every working-man to guard himself and his family against the danger of a pauper's grave. It was to permit the inclusion of the family that Parliament allowed in this sphere alone the insurance of the life of another—an exception to the general and salutary rule that no one might insure so as to benefit financially from another's death. With the payment under the National Insurance Act, 1916, of death benefit as from July 1, 1919, the whole original cause of I. I. comes to an end. Some thought that on the principle of *cessante ratione cessat* the institution of I. I. should be ended. But its potentialities for good in the future should guarantee its continuance, especially as the worst abuse has been removed by the Act of 1948. I. I. to-day has been transformed into a flexible system which enables the wage-earner (already compulsorily insured so as to guarantee him a minimum standard of living in all the changes and chances of life and a decent funeral when he dies) to assure for himself and his family all those infinitely various benefits at various monetary levels which he desires and for which he is willing to pay. The main remaining criticisms of I. I. to-day are its relatively high cost and the number of forfeitures. No fewer than 910,000 policies were forfeited in 1918, but this was a great improvement on 2,610,000 in 1938 and 3,160,000 in 1929. It may be added that the size and importance of I. I. are shown by the fact that the institution draws annually more than £110,000,000 from the pockets of wage-earners.

As administrator of the Industrial Assurance Act of 1923, the Chief Registrar of Friendly Societies is styled the Industrial Assurance commissioner (Offices: 17 North Audley Street, London, W.). See ANN. Reports of the Industrial Commissioner.

In the U.S.A. and Canada a similar system of I. I. operates. In the former country the administration is directed by the Gov. of the separate States, and not by the Federal Gov., while in the latter control is vested in the Dominion Gov. under the provisions of the Dominion Insurance Act of 1927.

**Industrial and Provident Societies.** Societies which can be registered under the Industrial and Provident Societies Acts of 1893-1928 are those formed to carry on any industry, business, or wholesale or retail trade authorised by the rules, including dealings in land. To a certain extent the rules of registration and general statutory regulation of these societies are assimilated to those of friendly societies (see under FRIENDLY SOCIETIES). Modern I. and P. S. are divisible into co-operative and building societies. (See also BUILDING SOCIETIES). The primary characteristics of an I. and P. S. are indicated by the

description: 'Industrial' connotes the making of a profit by the mutual personal exertions of the members, while 'provident' emphasises the providing for the future of the members by the distribution of the profits. The history of I. and P. S. shows that it was long before they gained public confidence, or even met with legal recognition. According to Irlabrook, they became associated with ever wider schemes enunciated by promoters who probably looked upon them as socialistic organisations. Robert Owen's projects were especially illustrative of this idea. The first legal recognition of co-operatives societies was in the Friendly Societies Act of 1846. The basis of the law of I. and P. S. is now to be found in the Consolidated Industrial and Provident Societies Act, 1893. No member of an I. and P. S., other than a registered society, may hold more than £200 in shares. The society must make an annual return of its receipts and expenditure, funds and effects to the Registrar of Friendly Societies. On the application of one-tenth of the members or of 100 where the membership is 1000 or more, the registrar may appoint an inspector to investigate the affairs of the society. The Prevention of Fraud (Investments) Act of 1939 requires some societies of the investment trust and property type to transfer their registration under the Industrial and Provident Societies Acts to registration under the Companies Act, 1929, and in consequence they must conform to the prospectus provisions of the latter Act; but they are free of the normal companies' registration fees and stamp duties on paid-up share capital. From the passing of the Act of 1929 registration under the Industrial and Provident Societies' Acts was restricted to bona fide 'co-operative' organisations, including societies 'conducted mainly for the purpose of improving the conditions of living, or of otherwise promoting the social well-being of members of the working classes'—the principle which underlay the old I. and P. Acts although not expressly enacted. Before the Second World War there were 5693 registered societies, with a total membership of 9,283,000 and funds of £281,507,000. See under CO-OPERATION.

**Industrial Psychology**, branch of psychology which investigates the effects, mental and physical, produced by their occupation on workers in the various industries, directed to the elimination of causes which lessen industrial efficiency. Among matters which come under review are the duration of working periods, pauses for rest, environment, monotony, meal times, fatigue, lighting, heating, and ventilation. A section deals with vocational tests designed to aid the selection of workers for particular trades or tasks. There is a chair of National Institute of Industrial Psychology which specialises in the study of vocational fitness (Aldwyck House, Aldwyck, London). There are also a chair of Industrial Medical Psychology in London Univ. and a Group for Research in Industrial Psychology, one of many

units in the Medical Research Council. With the great increase in the use of machines and large-scale production methods, particularly in the textile industry, it becomes of great importance that materials and methods of work and general working conditions should be designed specifically in view of what the greatest possible number of normal people could do with the least strain, fatigue and threat of ill-health. Machines and working conditions should be designed in the light of a sound knowledge of what the normal human senses, muscles and mind were fashioned and developed to do easily and well.

**Industrial Relations (Britain).** In Britain, unlike the position in many foreign countries, the relations between employers' and workers' organisations have been developed on a voluntary basis over many years. Collective bargaining between employers and workpeople has for many years been recognised in Britain as the method best adapted to the needs of industry and to the demands of the national character in the settlement of wages and conditions of employment. It has produced a well-co-ordinated system of conventional working arrangements affecting in the aggregate large numbers of work people and driving, generally with great precision, almost every aspect of I. R.

**Historical and legislative development of organisations of employers and workpeople.**—Organisation of employers and workers grew with the development of modern industry from the eighteenth century. In the sixteenth century the State regulated wages and conditions, and at the same time prohibited combinations both of workers and of employers from altering wages and conditions of work. But with the increasing complexity of industry and the div. of labour and wages this State system of regulation fell into disuse, and conditions in the *laissez faire* economy of the day, were left to be fixed by employers. During the eighteenth century, further laws were passed prohibiting combinations in various trades and, as the result of the report of a parl. committee of inquiry, the Combination Laws Repeal Act, 1824, was passed. This legalised trade societies and the immunity thus granted to combinations for the regulation of wages and conditions led to the widespread formation of unions. This led to disputes and strikes and to agitation for the repeal of the Act of 1824. An amending Act in 1825 limited the activities of the trade societies, making it difficult for them to take effective action without infringing the law; but the Act legalised the right to withhold labour by collective action, and this fundamental right has never been abrogated despite many changes in the powers permitted to Trade Unions. The immediate result of these developments was an expansion of union organisation, and the conception of one big union with a political bias emerged. Later, there was concentration on industrial amelioration through smaller but stronger organisations whose aims were confined to securing recognition and improvement in

wages and conditions of work. Strikes were frequent from 1825 to 1871. A Royal Commission of 1867 reviewed the position of Trade Unionism, and consequent on their recommendations two important Acts were passed in 1871—the Trade Union Act and the Criminal Law Amendment Act. The Trade Union Act of 1871 is the prin. Act on which the present-day status of unions is founded. The Criminal Law Amendment Act qualified the freedom conferred under the Trade Union Act by providing penalties for violence, intimidation, molestation, and obstruction of any person in order to coerce him for trade purposes. Since then there have been many subsequent Acts, supported by a great body of case law, and the law has been codified. These measures and judgments include the Conspiracy and Protection of Property Act, 1875 (*see CONSPIRACY*); the Employers and Workmen Act, 1875, dealing with disputes between employers and workmen arising out of breaches of contract and allowing courts to adjust claims for wages or damages; the Trade Union Amendment Act, 1876, amending the definition of Trade Unions given in the Act of 1871; the Taff Vale Judgment of 1901 and the consequent Trade Disputes Act, 1906 (*see under TRADE UNIONS*); the Osborne Case, 1909, and the Trade Union Act, 1913 (*ibid*); the Trade Union (Amalgamation) Act, 1917 (modified by the Societies (Miscellaneous Provisions) Act, 1940); and the Trade Disputes and Trade Unions Act, 1927 (*see TRADE UNIONS*). A period of trade depression followed the year 1875 and lasted for two decades during which trade unionism lost some of its strength. Strikes were common and nearly always unsuccessful. The unions confined themselves mainly to establishing such relations with employers as would ensure the maximum benefit in wages and conditions to the workers. When this phase passed a new unionism arose with a tendency towards a more active industrial policy and a reversion to the earlier idea of one big Union. But the statutory position of the Trade Unions was unchanged throughout this period, though the historic judgments above mentioned resulted in the further legislation indicated. Since 1868 the trade union movement has been centralised in the Trade Union Congress, the objects of which are 'to promote the interests of all its affiliated organisations and generally to improve the economic and social conditions of the workers.' Although the origin and main activities of Trade Unions lie in the industrial field, they have also a direct association with politics because of the connection between the Trade Union Congress and the political Labour Party. A joint body, the National Council of Labour, which is composed of representatives of the General Council of the T.U.C., of the Labour Party, of the Parl. Labour Party, and of the Co-operative Union is responsible for the consideration of questions which have both an industrial and a political implication.

Employers' organisations in the form of merchant guilds (*see GUILDS*) and livery

companies (*see COMPANIES, CITY*) have been in existence in Britain since the Middle Ages. These bodies which once dealt in some measure with both trading and labour questions affecting their craft differed materially from employers' organisations under present-day conditions. These employers' organisations, like most other Brit. institutions, have developed to meet particular circumstances and do not conform with any uniform plan. Employers' organisations fall into three groups: those constituted for dealing with I. R. questions, including collective bargaining with Trade Unions and the avoidance of disputes; those which fulfil that purpose and, in addition, deal with trading questions; and those which deal only with trading questions and which are therefore irrelevant to this article. As regards the first two groups, the repeal of the Combination Laws and the development of Trade Unionism in the nineteenth century stimulated both an increase in the number of these employers' organisations and the expansion of their activities. The extent of the industrial field they cover is estimated at about eight million workers. Some of these organisations are local in character and deal only with a section of an industry; others are national in scope and deal with the whole field of a particular industry; while in many of the chief industries there are local or regional organisations combined into national federations, but the degree of authority exercised by regional organisations over individual members, or by federations over affiliated organisations, varies considerably. Just before the Second World War there were about 270 national federations concerned with matters relating to the employment of labour and in addition about 1,550 other employers' organisations consisting mostly of local or regional branches of the national federations (an analysis of these 1820 organisations classified according to industrial groupings will be found in the *Abstract of Labour Statistics of the United Kingdom (1822-36)*). The corresponding total at the end of 1943 was approximately 1900, with the same ratio of local to national bodies. By 1919 there had been formed the National Confederation of Employers' Organisations (now called the Brit. Employers' Confederation) to secure the co-operation of the national federations in dealing with all questions arising out of the relations between employers and their workpeople. This Confederation, consisting of federations employing about 70 per cent of the total industrial population of Britain, is the employers' counterpart of the T.U.C. for dealing with labour questions affecting industry generally. In that capacity the Confederation has represented Brit. employers at the annual conferences of the International Labour Organisation since 1919. This Confederation and the T.U.C. have long been recognised as the authoritative channels of consultation between gov. depts. and organised employers and workpeople on matters affecting their respective interests, and at the outbreak of the Second World War the need for the



closest co-operation was at once recognised. Accordingly there was established in Oct. 1939, a National Joint Advisory Council of fifteen representatives nominated by each organisation. It was agreed that the scope of the Council's functions was to include all 'matters in which employers and workers have a common interest,' while, at the same time it was not to encroach on the jurisdiction of organisations concerned with particular industries. In May, 1940, the Council appointed a Joint Consultative Committee consisting of seven representatives of the Brit. Employers' Confederation and the T.U.C. respectively to advise the Minister of Labour and National Service on all matters arising in the period of emergency.

*Collective Bargaining and Development of Joint Negotiation between Organisations of Employers and Workpeople.*—In the early days of Trade Unionism the outlook of the Unions reflected both industrial aspirations and political ideas; but by about 1850 they were concentrating much more on the improvement of working conditions. The next stage was the establishment of some agreed relationship with employers' and employers' organisations. Conciliation Boards, with a form of procedure confined to the treatment of disputes, were set up in many industries; but with the development of industry the scope of this arrangement was widened and, by 1900, a number of the staple industries had adopted the practice of collective bargaining. The term 'collective bargaining' is applied to those arrangements under which the wages and conditions of employment are settled by a bargain in the form of an agreement between employers or associations of employers and workpeople's organisations; but in unorganised trades the individual workman accepts or refuses the terms offered by the employer without reference to any one else's interests than his own. For many years collective agreements have played a most important part in the regulation of working conditions in Britain, embracing a great variety of matters including not only wage rates but also hours of work, piece work arrangements, holidays, etc. The terms and conditions laid down in the agreement are applied not only to members of trade unions but also to non-unionists. Trade agreements are also largely observed by employers who are not party to them. This system of collective bargaining includes also agreements regarding the procedure for settling questions as they arise, and in no other country has so much been achieved towards evolving machinery for the avoidance of strikes and lock-outs. The whole of this collective system rests on the principle of mutual consent. This acceptance is purely voluntary depending solely on the sense of moral obligation. Loyal acceptance has in fact been the rule in all the trades concerned. Certain steps have, however, been taken in the interests of the community to encourage joint voluntary machinery where such does not exist and to assist where necessary in the settlement of disputes. There are two main legislative measures, the Conciliation

Act, 1896, which was passed as a result of the recommendations of a Royal Commission of 1891; and the Industrial Courts Act, 1919. In addition, however, much has been done through the conciliation officers of the Ministry of Labour to strengthen and support existing joint machinery and to promote new voluntary machinery as organisation developed in industry (for details see under ARBITRATION, CONCILIATION IN INDUSTRY). The first modification of the voluntary principle was made by the Trade Boards Act 1909, which set up Trade Boards empowered to fix minimum wage rates. This Act was confined to certain unorganised trades where 'sweated' conditions obtained, but the Act was extended in operation in 1918 by the Trade Boards Act of that year. Again, during the First World War, the Munitions of War Act, 1915, made strikes and lock-outs illegal so far as munitions work was concerned, unless the dispute had been referred to the Board of Trade which dept. could, in general, enforce arbitration, though it was understood that arbitration was merely supplementary to the agreements in various industries. Generally speaking, however, as the war progressed, arbitration became the practice, and this war-time national arbitration gave encouragement to the regulation of wages on a national basis during and after the war. But despite the legal prohibition of stoppages of work and the acceptance of compulsory arbitration, there developed industrial unrest throughout the country which seems to have had its origin in the 'shop stewards' movement and the theory of industrial unionism, notably on the Clyde and in Sheffield. The essence of this theory was devolution of authority to the workshop and the establishment of workers' control therein on militant lines with the ultimate object of securing control of industry generally. As a result of the recommendations of the Whitley Committee's Report there was an extension of the trade board system and the development of statutory machinery for the prevention and settlement of industrial disputes. The Committee laid down as an over-riding consideration 'the advisability of a continuance, as far as possible, of the present system whereby industries make their own agreements and settle their differences themselves,' and this is still the deciding factor of State policy in regard to intervention in industrial disputes (see WHITLEYISM or WHITLEY COUNCILS).

During the Second World War the emphasis on the voluntary principle was maintained as far as possible in the Conditions of Employment and National Arbitration Order, 1940. This Order prohibited strikes or lock-outs unless the dispute had been reported to the Ministry of Labour and had not been referred by him for settlement, and it also provided for the establishment of a National Arbitration Tribunal for dealing with disputes while laying down that if suitable collective joint machinery exists, the Minister would refer the dispute to that machinery for settlement and that the settlement

should have the legal force of an arbitration award.

The voluntary joint machinery for the regulation of terms and conditions of employment has evolved according to the varying needs and circumstances of the different trades and industries, but the better the industrial organisation the more effective and simple is the machinery of collective bargaining. In the early days of collective bargaining negotiation was generally confined to localities, but in most industries the scope of the machinery has been continually extended until national negotiations have largely replaced local interchanges on industrial questions. National negotiating machinery however varies considerably in form and in degree of authority over the local machinery and, moreover, the trend towards national negotiation does not mean that a national uniformity has been established. In regard to wage rates and conditions. Variety in the methods of collective bargaining as well as in wages structure is most to be found in industries where the principle of joint negotiation between organisations was well established before 1918. There is greater uniformity in industries where joint organisation is a more recent development and has been founded on the basis of the Joint Industrial Councils recommended by the Whiteley Committee. Consult *Industrial Relations Handbook*, H.M.S.O., 1934, and A. Beacham, *Economics of Industrial Organisation*, 1934.

**Industrial Revolution in Great Britain**, the compendious description given to the changes brought about in social structure by the inventions of the eighteenth century. In the later part of the seventeenth century Eng. industry had benefited by the immigration of foreign artisans, and many branches of cloth-making were learned from aliens, like the Walloons, and silk-weaving from the Huguenots, who came over in 1685 after the Revocation of the Edict of Nantes. Paper-making, glass-making, mechanical toy-making, and the making of clocks and watches were also among the activities established through aliens from the Continent. But the remarkable development of industry, due to the invention of machinery in the eighteenth century and to the exploitation of the coal mines, dwarfed the preceding progress into insignificance and resulted in a rapid and vast increase of the population and, incidentally, led to all the implications of the term known as *laissez-faire*.

Prior to the era of machinery, weaving had been a cottage industry, while yarn spinning was a spare-time industry practised all over the land by women and girls at home. Then in 1738 came the invention by Kay of Bury of the flying shuttle, which obviated the old and slow process of carrying the weft through the threads of the warp, and so enabled the weaver to double his output, and, in turn, led spinners to seek mechanical aids to meet the increased demand for yarn supplies. The next important inventions were the spinning jenny of James Hargreaves in 1764, the invention of the water-frame spinning roller of Richard Arkwright, Crompton's

'mule,' a combination of Hargreaves' jenny and Arkwright's water-frame—all of which inventions were at first applied to cotton-spinning only (see COTTON-SPINNING AND MANUFACTURE). Twenty-five years later came Cartwright's power loom in its perfected form, and by that year his Doncaster factory was equipped with a steam-engine, and a year or two after that hundreds of his looms were also selling to Manchester firms, while gradually the power loom was applied not only to the cotton, but also to the woollen industry. The next stride was the general supersession of water-power by steam, a change which came with the utilisation of the coal resources of the country, when James Watt patented his 'Watt' steam-engine, the revolutionary principle of which was the obviation of waste of power by the device of the separate condenser. Watt's various patents were taken out in 1781-85, by which time the change from water-power to steam made rapid progress, and mills and factories were set up near the coalfields, where fuel was cheaper. Later the iron-masters began to investigate the use of coal as a smelting fuel, and with improved methods the output from their furnaces increased by leaps and bounds.

All these inventions led to the elimination of the cottage or private worker and to the rapid growth of factories, and with them of the manufacturing towns of the N. of England. Pop. shifted and concentrated about the coalfields, so that places remote from the fields declined in prosperity, and from that time agriculture as a national industry suffered permanently. There were necessarily strikes and disorders as the result of these changes, but they were mere incidents in the general progress. Pop. increased by nearly 20 per cent in the first half of the century, and Brit. trade and wealth were augmented beyond measure, e.g. exports rose fivefold from 1720 to the end of the century. See J. L. and Beatrice Hammond, *The Rise of Modern Industry*, 1925; L. White and L. Shanahan, *The Industrial Revolution and the Economic World of Today*, 1932; H. Hamilton, *The Industrial Revolution in Scotland*, 1932; A. Dodd, *The Industrial Revolution in North Wales*, 1933; T. S. Ashton, *The Industrial Revolution, 1760-1830*, 1935.

**Industrial Schools**, see REFORMATORY AND INDUSTRIAL SCHOOLS; CHILDREN ACT.

**Industrial Welfare**. Since the First World War the question of I. W. has been increasingly important. It is concerned with the examination of the working and living conditions of industrial workers with the object of removing unnecessary hardships and providing amenities to mitigate the irksome nature of their work. There are many aspects to be reviewed in such services, including the study of health in industry, and the proper selection of workers for suitable employment. These depts. of I. W. concern the inside of the factory. Outside, such questions as housing, travelling, the visiting of the sick, recreation, etc., are dealt with. In a number of firms, elabor-

ate education schemes have been instituted, to provide both technical and social education so as to create better opportunities for advancement.

The modern movement may be said to have begun as a result of the impetus given to questions of health and welfare by the committees set up by the Ministry of Munitions in 1916 to safeguard the health of munition workers. Robert R. Hyde, who with Seaborn Rowntree was in charge of this work subsequently, in 1918, founded the I. W. Society. In its early days much of the work of the society and similar agencies was devoted to coal miners, and the increasing provision of pit head baths was one of the

professional organisation of personnel managers. While I. W. is still greatly concerned with health, amenities, recreation and the like, more recent developments which are likely to continue, have been in the direction of establishing joint consultation machinery between management and worker and making an effort to see that it works efficiently. Works councils, set up to promote co-operation between workers and management usually include in their functions the administration of welfare and social security schemes. Another subject which engages considerable attention is the selection and training of suitable men and women for posts of responsibility as foremen, super-



*Cadbury Bros., Ltd.*

AMENITIES FOR THE WORKER. A DINNER HOUR SCENE ON ONE OF THE WORKS RECREATION GROUNDS AT BOURNVILLE.

results. Subsequently the work in this industry was taken over by the Miners' Welfare Committee. The connection between the I. W. movement and most of the nationalised industries, however, continues to be close. The emphasis of the work has changed with the years, since many of the provisions for which the I. W. Society contended in its early days, as, e.g., holidays with pay, have now been generally accepted in principle, and in many cases either within the national agreements or even incorporated in legislation. Moreover all firms of any size have now their own personnel departments with personnel officers trained to handle the human problems of industry. The Institute of Personnel Management is the

vises and so on. Attempts have also been made to extend the principle of I. W., which is recognised by all the larger firms, to the very many small ones, which in the aggregate represent such a large proportion of industrial workers, and where welfare provisions are not so fully developed.

Both in Britain and in the U.S.A. (where I. W. is termed Industrial Hygiene), examinations are conducted on the problems of injury by dust and poisons and of ventilation and lighting. The medical service attacks such questions as periodic examination of workers, the establishment of dental and eye clinics, rest-houses for fatigued workers, while sanatoria and private hospitals are maintained in many industries. Research is conducted with

assiduity and success, and that the movement is justified is proved by the fact that in both countries the days of labour lost by illness have considerably reduced. Modern methods in factory building and layout have of course much influence on the provision of amenities. See also *MENTAL TESTS*. See *Annual Report of H.M. Chief Inspector of Factories*; pub. and Jours. of Industrial Welfare Society and the British Indentured Institute of Management; and Cadbury Bros. Ltd., *Record, 1919-1939, 1939*; and E. Mayo, *The Social Problems of an Industrial Civilization, 1919*.

**Industrial Workers of the World**, organisation of revolutionary labour unions formed and operating chiefly in America. It was founded in 1903 at Chicago, and was the outcome of a meeting of Socialist and trade union leaders. The most prominent of its leaders were E. V. Debs, W. Haywood, W. Trautman and the Rev. T. J. Hagerty. The activities of the I. W. W. were generally characterised by extreme violence, and in many states a campaign of attempted suppression was launched against them, ending in the deaths of Joe Hill in Utah, and Little in Butte.

After the First World War communism absorbed many of the I. W. W. supporters, and organised opposition from the various states caused a further decline. Special laws were passed rendering such forms of

impersonation of unskilled labourers. In Great Britain minor branches have been formed at London, Liverpool and Glasgow.

**Indus Valley Culture**, term by which is known the auct. civilisation of the Indus valley. Excavations carried out in 1922 at Mohenjo-Daro, a large mound 23 m. S. of Larkana in Sind, revealed the site of an auct. city which had existed some five thousand years before. It appears to have been successively destroyed and rebuilt seven times over a period of perhaps a thousand years from 3500 to 2500 B.C. Other evidences of the civilisation of this time have been found at Harappa in the Montgomery dist. of the Punjab. These two sites, 100 m. apart, and others which have been discovered show that the civilisation was widely spread along the Indus valley. The ruins of the city of Mohenjo-Daro show a more advanced state of civilisation than existed in India in much later times. It had affinities with the auct. civilisations of Sumer and Mesopotamia, but although there was undoubtedly communication between them it is not known whether they were independent or whether one was the offshoot of the other. The racial origin of the Indus people cannot be determined with certainty. They lived in well-built brick houses of more than one storey, equipped with baths and drains. They were an artistic people, skilled in pottery, carving, and metal work, using copper, bronze, and silver. Iron was unknown. A number of seals beautifully carved on steatite gave representations of various animals, including the buffalo, elephant, sheep, and camel. These animals were probably domesticated. Horses and cows do not seem to have been known. No remains of a building have been identified as a temple. Religion seems to have centred on the cult of the Mother-Goddess, also of a male god from which the Hindu Shiva may have derived some of his attributes. The causes which led to the downfall of the civilisation and the extinction of its cities can only be surmised. It is probable that the prosperous cities were overrun by a foreign invader and the people massacred. See Sir J. Marshall, *Mohenjo-Daro and the Indus Civilization, 1931*; L. E. Mackay, *The Indus Civilization, 1935*.

**Indy, Paul Marie Théodore Vincent d'** (1811-1931) Fr. composer, b. at Paris. Member of a noble family of the Ardèche dist. in the Vivarais. His mother died at his birth and he was brought up by his paternal grandmother, a good musician. At the age of eleven he was sent to Méner for the pianoforte and Lavignac for theory, and later studied pianoforte under Marmontel. In 1870 he pub. his first composition and served in the defence of Paris against the Prussian army. To please his family he studied law, but was determined to be a musician and went for advice to Franck, who offered to teach him. He also joined Colonne's orchestra as drummer to gain experience. Paderewski gave the first performance of one of his works, the overture to Schiller's *Poëlonimi*, afterwards part of his *Valentin* trilogy.



INDUS VALLEY CULTURE:  
A stone statuette from Mohenjo-Daro

syndicalism illegal, and in 1918 more than a hundred leaders were imprisoned after a trial in Chicago. Moreover, the restrictions imposed by later immigration laws reduced still further a membership hitherto largely maintained or augmented by the

Next to Franck he admired Liszt, with whom he spent sev. months at Weimar in 1873, and Wagner, whose first *Ring* cycle he attended at Bayreuth in 1876. In 1894 he joined Charles Bordes, together with Gullmunt, in founding the Schola Cantorum; he taught there until his death and had many pupils of the highest distinction. From 1912 he also directed the orchestral class at the Conservatoire.

His works include sev. operas (including *Pervault*), theatre music, symphonies, chamber music, songs, choral works, cantatas. See studies by A. Sorley, 1914, and L. Vallas, 1916; and A. Gabeaud, *Auprès du Maître V. d'Indy*, 1938.

Ineboli, seaport of Asiatic Turkey, on the Black Sea, about 70 m. S.W. by W. of Sinope. It possesses a roadstead, and exports wool, mohair, etc. Pop. 48,000.

**Inebriates and Inebriates Acts.** The term inebriate is generally used to denote an habitual drunkard. Clinically, drunkenness (*q.v.*) is no more than a temporary cerebro-spinal disorder induced by the absorption of much alcoholic drink in a short space of time. It varies in form according to such circumstances as the amount of alcohol taken, the state of the stomach, the climatic condition, and the reactions of the individual, and in its psychical effect on the individual there may be many degrees of perversion of the senses, vertigo, and confusion of the intellect. But when long persisted in, it may result in a diseased condition of the nervous system popularly termed inebriety. The symptoms are a craving for alcohol or an irresistible obsession and impulse to drink (dipsomania), which may be either chronic or periodical mental disorder of a depressive nature characterised by an undefined sadness, uneasiness, and apathy. The only chance of cure is to protect the subject against himself by enforcing total abstinence and by suitable treatment with alkaline bromides or other sedatives, or by psychiatric treatment to resolve the inner conflict which is driving the person to drink. It is now generally recognised that drunkenness is invariably a symptom of anxiety; if the cause can be discovered the symptom will disappear. The Inebriates Acts allow of two classes of institutions: State and certified inebriate reformatories, and licensed retreats. A list of retreats for inebriety will be found in *Burdett's Hospitals and Charities* (1930), where it is pointed out that any list of Inebriate Homes must necessarily be incomplete: only a few are licensed under the Inebriates Acts, and the majority of unlicensed homes are essentially of a private character with very few patients.

**Inebriates Acts.**—The object of these Acts is to make provision for the compulsory detention and special treatment of criminal 'habitual drunkards' in state or certified inebriate reformatories, and provide for the voluntary detention of non-criminal 'habitual drunkards' in licensed retreats. In connection with the Inebriates Acts it may be noted that by the English law drunkenness is no excuse for crime, though where intention is of the essence of the offence, it may well amount to

an extenuating circumstance; but drunkenness so far persisted in as to produce *delirium tremens*, or any other species of alcoholic insanity, renders a person incapable of committing crime in the eye of the law, though he may be confined as a criminal lunatic. (See further under CRIMINAL LAW; DRUNKENNESS).

The Habitual Drunkards Act, 1879, enables a co. or bor. council to grant to any person or persons jointly a licence to keep a retreat. One, at least, of the persons to whom a licence is granted must reside in the retreat and be responsible for its management, and the medical attendant of the retreat must be a duly qualified medical man. 'Habitual drunkard' (a term now changed in the later Acts to 'inebriate') in this Act is defined as a person who, not being amenable to any jurisdiction in lunacy, is, notwithstanding, by reason of habitual intemperate drinking of intoxicants, at times dangerous to himself or herself, or to others, or incapable of managing himself or herself, and his or her affairs. The Inebriates Act, 1898, which initiated the estab. of these reformatories, gives power to the court, where a person is convicted on indictment for an offence punishable with imprisonment or penal servitude, and who committed the crime while under the influence of drink, to order him to be detained in a state or certified inebriate reformatory provided: (1) The jury find, or the prisoner admits, that he is an habitual drunkard, and (2) the managers of the reformatory are willing to receive him. The commitment may be either in addition to or in substitution for any other sentence.

**Inequality, term in astronomy.** For the sake of convenience the average motion of a heavenly body (supposed to be made in a circle which has the average distance of that body from its primary for its radius) is the first object of calculation when the place of the body at some future time is to be predicted. All the alterations which are rendered necessary by the unequal motion of the planet are called inequalities.

**Inert Gases, see RARE GASES.**

**Inertia.** Newton's first law, 'That every body perseveres in its state of remaining at rest, or of moving uniformly in a straight line, except in so far as it is compelled by impressed forces to change its state,' is sometimes called the law of inertia. It has always been easy to understand that force is required to set a body at rest in motion, and the property of *I.* was recognised from this standpoint by the ancients. It was not until the time of Galileo, however, that it was recognised that the same property held true of bodies in motion, and that it was understood that were it not for external causes, a body in motion would never of itself come to rest. 'The *Moment of Inertia* is found by summing the products of every particle of a mass into the square of its distance from a given point or axis of rotation, or expressed as a formula  $I = \sum(mr^2)$ . See MOMENTS.

**Inez de Castro, see CASTRO, INEZ DE.**

**Infallibility, freedom from all error in the teaching of faith and morals claimed by the Rom. Catholic Church.** The ques-

tion of the I. of the Church has been a subject of dispute for many centuries, the dispute centring not in the question as to whether or no the Church is infallible, but in the question as to how and where its infallible utterances were made. The view of the I. of the Church held by the E. Or thodox churches is retrospective, their teaching being that all the acts of the councils received in the E. as oecumenical are infallible. In the W., the question has been one between the Gallican and Ultramontane parties (see GALLICANISM), and the latest decision of the Rom. Church on the subject was made at the Vatican Council of 1870. This council teaches 'That when the Rom. Pontiff speaks *ex cathedra*, that is, when he, using his office as pastor and teacher of all Christians, in virtue of his Apostolic office, defines a doctrine of faith and morals to be held by the whole Church, he, by the divine assistance promised to him in the person of blessed Peter, possesses that infallibility with which the Divine Redeemer was pleased to invest His Church in the definition of doctrine on faith or morals, and that, therefore, such definitions of the Rom. Pontiff are irrefragable in their own nature and not because of the consent of the Church.' No authoritative decision has yet been made, however, to say exactly when the pope is speaking *ex cathedra*, and it is disputed among Rom. Catholics as to whether certain utterances are to be regarded as infallible or not. It is quite agreed, however, that the I. does not extend to pronouncements on scientific and similar matters.

Infamy, not now a term of art in Eng. law, but formerly used to denote the loss of status consequent on conviction for an offence involving dishonesty or inhumanity, which loss entailed disqualification as a witness or juror. The prin. crimes which involved I. were treason, felony, all offences based upon fraud, piracy, subornation of perjury, and common law cheating. But neither past nor present moral heinousness now disqualifies anyone as a witness, though the evidence of such a person may well be discredited by a jury, and conviction for crime does not disqualify as a juror unless, of course, the person convicted is actually in prison.

Infant, in law, means a person, male or female, under twenty-one years of age. The status of infancy in law is of especial importance in regard to contractual capacity and responsibility for crime. (As to the effect of infancy on the validity of contract, see under CONTRACTS.) An adult who has made a contract with an I. can not make it void, though the I., generally speaking can. A male I. at fourteen may contract a valid marriage, and a female I. at twelve. If two I.s, below fourteen and twelve respectively, have married, they need not marry after attaining those years, provided they agree to or affirm the marriage that has taken place. Where the consent of parents or guardians is required a pub. of banns is void if any one parent or guardian publicly dissents. A licence cannot be obtained by an I. without swearing that he has obtained the

necessary consent, and the consent required is that of the father if living, and if dead the guardian or guardians. If no guardians, then that of the mother, if unmarried, and if not, of some person appointed by the court. A marriage, however is valid without consent although the parties may incur penalties, e.g. for false swearing. An I. husband may be sued for his wife's debts contracted before marriage, but would not be liable to a greater extent than the property he may have acquired through or from his wife. For the responsibility of I.s for crimes, see under CRIMINAL LAW.

Infanta, the Sp. and Portuguese title formerly given to the princesses of the royal family, the eldest princess being also called 'la princesa'. It corresponds to 'infante' the title formerly given to the princes of the royal house.

Infant Feeding, see CHILD.

Infanticide, The practice of I. was common to aet. nations, prevalent in India, especially among the high caste families of Rajputana, and in China down to recent times, and probably largely practised among aboriginal peoples at the present day. In the customs of savage races, I. is closely associated with exogamy, or the custom of marrying outside the tribal community. Female children especially suffered, for among savage tribes they were a source of weakness and danger, since they were useless as fighting units. With nations or peoples of a later date, especially the Hindus, the motives for I. were occasionally religious or superstitious, but far more often merely prudential. The virtual stamping out in India of this practice—only too glaringly evidenced by the extraordinary disproportion of the male to the female population for again it was the females that chiefly suffered—is associated with the names of Jonathan Duncan and Maj. Walker, who initiated measures which culminated in Acts authorising dists. whose percentage of female children fell below a certain average, to be placed under police supervision. No less terrible in its incidents was the custom in China, and although mitigated by the influence of Christian missionaries, there is reason to believe that it is still practised. As to classical times, it is curious that the *ius cæle necque* (right of life and death) over his children which the Rom. father had till late in the hist. of Rom. jurisprudence and the analogous right given to the Gk. head of a family, should have prevailed so late as it did in societies otherwise so highly intellectually endowed. Among the Spartans, too, there were laws positively enjoining the exposure of deformed children, &c. Indeed, at an earlier date among the Romans. The combined effect of the legislation of Constantine, Valens and Valentinian, at a period strongly under the influence of the Christian fathers, put an end to the practice of exposure and took away the paternal right of life and death. In England intentional or other inexcusable I. is either murder or manslaughter, according to the circumstances. To amount to murder

it must be proved that the infant was in the legal sense a human being, or, to adopt Coke's phrase, 'a reasonable creature and being.' This means that the child must have completely proceeded in a living state from the body of its mother, whether it has breathed or not, and whether the umbilical cord, or navel, is severed or not. Therefore, killing a child in the womb is not murder, although it may well be punishable under the Acts relating to abortion. But if a child die, after being born alive, as a result of drugs or wounds received while in the womb, such I. is murder. (See also ABORTION; CHILDREN, CRUELTY TO, SOCIETY FOR PREVENTION OF; CONCEALMENT OF BIRTH; and ILLEGITIMACY.) The Scots criminal law is not dissimilar to the Eng. in this respect. All over Europe, and in some Oriental countries, through the exertions and pecuniary assistance of Europeans, a great deal has been done to prevent I. by the institution of founding hospitals. See J. Pegg, *Infanticide's Cry to Britain*, 1844; A. M. Carr-Saunders, *The Population Problem*, 1922.

**Infantile Diplegia**, see BIRMI-PALSY.

**Infantile Paralysis**, popular name for acute anterior poliomyelitis. It is a form of spinal paralysis, usually confined to one limb and caused by an inflammatory affection limited to the anterior part of the grey matter of the spinal cord. It affects the function of motion but not that of sensation. It is commonest in the earlier time of childhood but is not actually confined to children. The beginning may be unsuspected, or often the onset is preceded by an acute febrile attack lasting some days; but in either case paralysis comes on, at first, in some cases, very extensively, but later becoming limited to one or other limb or to a group of muscles. The disease is not progressive and, when its limits become clearly defined within a few days of its commencement, recovery, so far as other parts are concerned, may be assumed; but in the paralysed parts incomplete recovery of power is the general outcome (*Black's Medical Dictionary*). Large epidemics are not a feature of the disease in Great Britain. It was announced in Jan. 1917 that two members of the chem. dept. of Stanford Univ., Dr. Hubert S. Loring and Dr. C. P. Schwerdt, had isolated in a state at least 80 per cent pure the virus of poliomyelitis, and thereby had opened the door to experiments for the development of a pure vaccine for use against I. P.

**Infantilism**, term applied to those conditions when childish characteristics persist into later life. Where I. is myxoedematous, it is due to atrophy or inactivity of the thyroid gland, and is then identical with cretinism. The term 'infantilism' includes many other groups of cases which are with difficulty reduced to a type. The special characteristic is absence or modification of some of the secondary sexual features; e.g. hair does not grow in the armpit or the pubic region, and the voice may retain its childish pitch. The individual may be fully adult in other respects, possessing normal sexual functions, but usually shows malnutrition, either

generally, or in some special direction. The cause is some constitutional derangement of metabolism, and the condition generally illustrates the tendency under such circumstance towards modification of the secondary sexual characteristics. Myxoedematous I., or cretinism, is due to the disturbance of a specific secretion, that of the thyroid gland. If the gland is absent at birth, or is congenitally diseased, the sexual characters remain undeveloped during life, and the condition may not be observed until the time of puberty. The face retains the chubby appearance of childhood, the voice remains of childish pitch, the second dentition may be absent or abnormal, the genitals are rudimentary, and the mental outlook and intellectual activity remain those of a child. When the thyroid gland is removed in adults, the resulting condition seems that of a partial reversion to childhood; the mental activities become slower and less complex, the patient is childishly irritable, and there is a marked loss of hair. The treatment of myxoedema, whether occurring in adults, or as a congenital condition, includes administration of extract of the thyroid gland, which has been found of particular efficacy in many cases. I. may also be due to nervous or emotional hold-ups, which can be resolved by psycho-therapy.

**Infantry**, name given collectively to a body of troops who fight on foot and who are armed only with hand weapons. The Gk., Rom., and Gothic armies all had their supplies of I., but the I. in most cases was simply that part of the fighting force which could not be mounted. The mounted men were the chosen warriors, the I. the rank and file. The armies of Greece and Rome were usually composed of more I. than anything else, and the I. fought in close serried masses, and gave by their closeness an added strength and weight to their tactics. The period between the fall of the Rom. empire and the end of the eleventh century was that of the feudal armies, when battles were decided not by I. but by cavalry charges, and the I. of the defeated side were indiscriminately slaughtered. But a change was brought about first by the introduction of the archer, and secondly by the introduction of I. tactics which were capable of overthrowing the feudal cavalry. The battle of Falkirk (1298), between Wallace and Edward I., although it was not a victory for the I., nevertheless illustrates very strongly the new methods. The 'schiltrons' of Wallace, i.e. the circles of spearmen, did much to hold the cavalry at bay. The best example, however, was Courtrai (1302), where the burghers of Bruges overthrew the feudal army of Count Robert of Artois. Creedy was essentially a victory for the new I. tactics. The age of the feudal army was declining; the combination of the resistance of the I. and the shooting of the archers seemed about to give it its death-blow. But the lessons which I. had taught during the Hundred Years' war were speedily forgotten, and cavalry again asserted its superiority. But from this time onwards I. became a definite part of the army. The introduction

of firearms naturally enhanced this result.

The period from the opening of the sixteenth century proved that the archer was no longer of any great value, and for a time the I were armed in Swiss fashion with long pikes. Finally, a combination of I armed with pikes and I armed with guns was adopted, and as these tactics commanded the enemy both at a distance and at close quarters, for a time, at any rate, the problem seemed solved. The sixteenth century and the early seventeenth was the age of the mercenary soldier. Against untrained rebels this type of soldier was invincible, and nowhere do we find a better example of this than in the 30 years' war in the Netherlands. The Thirty Years' war had great results in the tactics of the I of

and then pouring in a murderous volley and following this up with a bayonet charge. The next great epoch making war, as far as the I were concerned, was the Franco-Prussian War of 1870. The massed firing tactics were almost entirely relegated to the artillery, and the I, in extended order, and taking advantage of every inch of cover, slowly crept to the attack. These methods subsequently underwent some change, especially as a result of the S. African War, and later of the Russo-Japanese War, but the changes did not radically alter the principle and the attack in extended order still remained the basis of I tactics.

*Recruiting and Discipline.* The head of the 'other ranks' is the regimental



ENGLISH INFANTRY MEETING THE NORMAN CAVALRY

In this panel from the Bayeux Tapestry the infantry are seen with javelin, axe and bow.

Europe. The methods adopted by Gustavus Adolphus and the Swedes during that war were eagerly imitated by the rest of Europe. Especially noticeable is it that the arquebus used by the Swedes had been lightened and could now be fired without using a rest. At the end of the seventeenth century we find that the old pike tactics of the I pass away altogether. The bayonet fixed to the muzzle of the gun took the place of the pike. New tactics were adopted. The enemy were riddled with fire from the guns at as short a distance as possible, and then when the opposing ranks had been disorganised, the bayonet charge completed the attack.

From the year 1793 can be dated the beginning of modern I tactics. The change was due very largely to the methods of Napoleon, who, having poured an overwhelming artillery fire into the masses of the enemy, brought his I up to complete the attack. It was a combination of the two methods of artillery fire and I charge. The I methods of the Peninsular war were on the British somewhat different. They were modelled on the old platoon fire tactics of Frederick the Great, but they combined mobility and an ability to use cover with the massed strength of the former German type. The tactics consisted in reserving fire until the enemy were within easy striking distance,

sergeant-major (warrant officer, class 1), the four company sergeant-majors are warrant officers, class 2. Both classes hold warrants from the Secretary of State for War. Each regiment (except rifle regiments) carries two colours: the first is the 'king's' and the second the 'Regimental'. Each regiment of I of the line had two battalions in accordance with the 'Cardwell system' established in 1881. (See CARDWELL, EDWARD, VISCOUNT.) All regiments (except the King's Royal Rifle Corps and the Life Brigade) had territorial titles, the majority connected with counties. Before 1881 each regiment had a number. One battalion was always on foreign service and the other at home. Its units were partly trained at regimental depots situated in the county or area to which the regiment belonged as indicated by its title. They were then passed on to the Home Battalion which completed their training and, when required, passed trained men on to the battalion on foreign service to keep it up to strength. The Foot Guards are household troops, but their organisation and training correspond in their main features to the I of the Line. They provide guards over royal palaces, etc., and furnish royal escorts on ceremonial occasions. The standard of recruit is high and it would appear to be generally conceded



that the Brit Foot Guards are the finest I in the world.

Changes introduced in the organisation of the I in 1946 to meet the necessities of contemporary warfare altered the Cardwell system almost out of recognition. Under the test of battle experience the Cardwell system of linked battalions twice broke down. It was found, e.g. that one brigade of a div on an overseas front might suffer such heavy casualties that the reinforcements for its battalions on the lines of communication were inadequate to reform its ranks while other brigades may have suffered no serious losses and in such cases these battalions obviously had to be reinforced from other regiments. Today the Cardwell principle has been found to be too rigid even in time of peace. The foundation of reinforcement under the Cardwell system was that there was an equal number of battalions at home and abroad, but after the Second World War it was clear that fewer I battalions would be required owing to the development of airborne and armoured divs, and also because the army in India would be heavily reduced after power was handed over to the Indians. Possibly the most convenient reorganisation for reinforcement would have been the formation of a Corps of I, in which postings could be carried out without regard to regimental ties. But this suggestion was resisted and compromise reached (1941) whereby a system of groupings was effected by the formation of fifteen groups of regiments with territorial or traditional connections. Every battalion in each of these self-contained corps retains its separate identity. In order to reduce the total number of battalions it was decided to relegate some to temporary 'suspended animation' without officers or men on their strength, but ready to be recruited in emergency and in any case at the end of a stated period.

*Factual Organisation and Equipment of British Infantry*—The number of men which can be controlled in battle by one commander is strictly limited. The basis of I organisation is accordingly the section which is the largest group of men which can be personally controlled by its leader throughout the battle. Sections are grouped into platoons, platoons into companies, companies into battalions, and battalions into I brigades which are the largest unit which consist solely of I. This system known as the chain of command, ensures orderly manoeuvres by any number of units in accordance with a single plan, and enables the section commander to assist in giving practical effect to the plans and instructions of the commander in chief. An I battalion consists of head quarters company, support company, and four 'rifle' (in fact, light machine gun) companies. It is commanded by a lieutenant colonel, with a major as second in command. The headquarters company is commanded by a major or a captain. The platoon is the smallest I unit which can be divided into interdependent bodies each capable of fire and manoeuvre. It is thus the unit on which all I tactics are

based. The section is the fire unit. Companies of each battalion are designated by serial letters or numbers, platoons are numbered serially throughout each battalion.

After 1936 all I battalions of the Brit Army gradually became either 'machine gun battalions' or 'rifle battalions,' so as to provide I brigades consisting of three rifle battalions, and one machine gun battalion each.

During the First World War open warfare had soon become impossible, and the employment of cavalry was very much curtailed on the Western front and not only was the cavalry converted into I, but the proportion of I to other arms greatly increased. Before the introduction of tanks a battle was usually a contest between opposing I supported by artillery. As artillery could not advance to hold positions, offensive action fell entirely to I.

The modern Brit I is equipped with rifles, bayonets, grenades, Vickers machine guns, Bren light machine guns, Sten sub machine guns, mortars and anti tank guns and anti tank projectors. Anti gas equipment is also carried. The multiplicity of weapons and methods calls for a better type of recruit than formerly if he is to assimilate the knowledge for their efficient application. Consequently educational training now forms an integral part of the Brit soldier's life. More attention is also given in the modern army to physical and recreational training so as to ensure fitness for service under more strenuous conditions. The kit carried by the infantryman has been increased in order to provide him with the means of defence (1) against shrapnel by the provision of a steel helmet and (2) against gas by the provision of a gas respirator. These additions hinder mobility to a certain extent and I are now, if required to operate at a distance, transported either by road or by air. This fact has given rise to two specialised types of I battalion—the motor battalion which forms an integral part of armoured formations at the airborne or parachute battalions transported either by glider or by military aircraft. With these two exceptions Brit I battalions tend to be more uniform type than those of most armies since there is no special establishment for rifle (*Taeger*, *Chasseur*) or mountain (*Gebirgsjäger*, *Chasseur d'Alpin*) units.

A further characteristic of Brit tactical I organisation is that whereas the regiment of most armies consists of two to four purely 'rifle' battalions together with infantry gun, anti tank and sometimes engineer companies which all form an integral part of the regiment, the Brit brigade is essentially a team of three identical battalions. In action this can form a Brigade (group) U.S. Combat Team together with artillery, engineers, anti tank guns etc. allocated from other arms of the div, but in a division each battalion disposes, in its support company, of its own heavy weapons handled by carrier, mortar, anti tank, anti aircraft and machine-gun platoons. Where machine-gun battalions organised under the reform

of 1935 still exist, they are under the command of divisions or of higher formations.

**Infant Schools.** The Swiss reformer-pastor, Jean Frédéric Oberlin (1740-1826), was the founder of I. S. on the Continent, but Robert Owen (1771-1854), the Eng. social reformer, independently inaugurated the idea in Scotland by forming a crèche at his father-in-law's cotton-mills at New Lanark on the Clyde. This crèche became the nucleus of a school guided in 1816 by a headmaster, James Buchanan. In 1818 Buchanan was put in charge of an I. S. at Westminster, and on his adv. Samuel Wilderspin was given the headship of a school in Spitalfields in 1820. When the London Infant School Society was formed in 1821 Wilderspin superintended the opening of numerous schools. David Stow (1793-1864) was instrumental in forming the Glasgow Infant School Society in 1826, which performed pioneer work in Scotland. The influence of Friedrich Wilhelm August Froebel (1792-1852) (q.v.), the Ger. educationist, made itself felt in the middle of the nineteenth century in England, and the first Kindergarten (q.v.) school was opened in Hampstead in 1853. Physical exercises and games, story-telling, and the use of the Froebel 'Gifts' were now used in the education of children under legal school age. Dr. Montessori's system, signally successful in Italy, was introduced into England early in the twentieth century, with its revolutionary ideas of child-freedom, and the encouragement of individuality among children. At about the same time Margaret McMillan instituted her Open-Air Nursery School in the slum dist. of Deptford, naming it after her sister Rachel, who had shared her enthusiasm for child welfare, but had died before this scheme could attain fruition. In open-air shelters children are taught the elementary facts of health and cleanliness in addition to their juvenile lessons; they are taught personal service; certain stated times are given to rest; and good food is provided for them. See D. Salmon and W. Hindshaw, *Infant Schools, Their History and Theory*, 1904; P. B. Ballard, *Practical Infant Teacher*, 1929; J. W. Adamson, *English Education, 1769-1902*, 1930; Margaret McMillan, *The Nursery School*, 1930; Margaret Lowndes, *Play in Childhood*, 1935; Maria Montessori, *The Secret of Childhood*, 1936; P. E. Cusden, *The English Nursery School*, 1942.

**Infant Welfare, see MATERNITY AND INFANT WELFARE.**

**Infection**, distinguished from contagion (q.v.) by reason of the fact that it signifies the transmission of a disease without direct contact. Thus infectious diseases are usually contracted by breathing. In malarial diseases, e.g. ague, the disease poison is taken from the soil, air, or water in some way, but there is no conclusive evidence that the disease can be transmitted directly from one person to another. Typhoid fever is infectious, and is usually water-borne. The typical infectious diseases are, however, smallpox, measles, mumps, scarlet fever, whooping-cough, etc., and these are both infectious and

contagious. I. depends upon the presence of a germ (q.v.), and prevention is best effected by isolation. See articles on the diseases mentioned, and BACTERIA, CONTAGION, DISINFECTANTS, and HYGIENE.

**Infertment, or Saisine**, in Scots law means both the act or symbolical ceremony of giving to another the possession of heritable land and the writ or instrument of saisine in which such act or ceremony is expressed. I. being a feudal act, and the crown being the lord paramount of all Scottish feus or fiefs, an I. can only be under a grant from the Crown. This is interpreted in practice to mean, that to constitute a valid I. the transferee must show a feudal chain of title going back ultimately to the crown. But there may be real rights without I. These exceptions include leases, servitudes (analogous to rights of way or other rights over the land of another), feudal lands situate in the Orkneys and Shetlands, crown lands, and churches and glebe of the Church of Scotland. The chief methods of I. now in vogue are: (a) By direct registration. (b) By transmitted warrants, i.e. by a transferor who is not himself infert and can only transmit through another. (c) By notarial instrument, used where the disponent does not wish to record the whole of the conveyance. (d) By warrant of registration under the Land Registers Act, 1868, and the Consolidation Act of 1868. (e) According to the clause of direction in a deed to record the deed in the Register of Saisines. It has long been settled that a purchaser, or a lender on heritable security, is entitled to rely on the registers of saisines, and is not affected by any conveyance or encumbrance which is not recorded on the register.

**Inferior Courts** comprise in England all those that are below the dignity of the High Court of Justice, and whose decisions are subject to review by the High Court. The prin. I. C. exercising civil jurisdiction are the co. courts, from the decisions in which an appeal lies to the High Court where the amount involved exceeds £20. Where the plaintiff in the High Court has no visible means of paying the defendant's costs, the defendant may, on swearing an affidavit to that effect, get an order remitting the case for trial in the co. court. There are also certain local courts exercising a considerable civil jurisdiction, the most important being the Chancery Court of the County Palatine of Lancaster, the powers of which, within its local limits, are similar to those of the Chancery Div. of the High Court, the Mayor's Court of London, the Court of Passage of Liverpool, and the Salford Hundred Court, all exercising within their local limits a full common law jurisdiction. The courts of the univ. of Oxford and Cambridge have by anet. charters a jurisdiction in actions to which any member or servant of the univ. is a party, at least where the cause of action arose within the liberties of the univ. Other I. C., called the Eccles. Courts (q.v.) give redress in actions of an eccles. or spiritual nature. So great an authority as Stephen states that their jurisdiction rests entirely on the tolerance of the municipal law. The criminal courts of

inferior degree are (1) The general sessions or quarter sessions (*see* COUNTY SESSIONS), which is a court of first instance and of appeal against summary convictions by petty sessional magistrates. An indictment (*q.v.*) may be removed to the King's Bench Div. from quarter sessions by writ of *certiorari* (*q.v.*) in certain cases such as where an impartial trial cannot be had in the I.C., or some more than ordinarily difficult point of law is involved. (2) For quarter sessions, with judicial functions identical with those of the quarter sessions, and presided over by a recorder who becomes a borough magistrate *virtute officii*. (3) Petty sessional courts consisting of at least two justices or a police or stipendiary magistrate or the lord mayor or an alderman in the City of London. These courts have a limited jurisdiction to try indictable offences under the Summary Jurisdiction Acts. The King's Bench Div. can grant a *certiorari* to transfer a case to the High Court where the magistrates exceed their jurisdiction or there is some manifest informality, and on a *special case* stated by the justices can decide any point of law submitted for the decision. The High Court may issue a writ of prohibition to stop proceedings where the magistrates have no jurisdiction and generally speaking may I.C. which attempts to exceed the limits of its jurisdiction may I.C. prevented by such a writ and conversely a writ of *mandamus* may be issued to compel any I.C. to exercise its jurisdiction at all events in cases where I.C. is son hit in respect of the infringement of a *de jure* right or duty.

**Inferiority Complex**, in psychology, an emotional idea of the self or ego, whose unconscious activity gives the sufferer an affective attitude of inferiority toward himself. It has its origin in a weak narcissism or self-love and may lead to a neurosis which causes the person to doubt his capacity.

**Infidel**, term popularly used to describe a person who rejects Christianity as a divine revelation. The word does not properly apply to heathens or heretics. Moderns employ a similar term (*kaufur* 'kafir' etc.) to describe Christians.

**Infinite**, cannot describe the attribute of the Deity or Absolute Being but is also used to describe the boundlessness and immeasurableness of space, time or the universe. The use of the word in the Milesian school of Greek philosophers, and by Anaximander marks however crudely the beginning of an attempt to give a scientific statement of the universe. It is often assumed by modern thinkers that the Greek philosophers, and even such modern philosophers as Hobbes and Hegel, confounded the idea of the 'immeasurable' with that of the 'unbounded' because according to the methods of elliptic geometry, it is at least plausible to argue that space is as 'measurable' as the surface of any unbounded spherical body, or the necessarily unbounded circumference of a vast circle, and, again, because geometry can conceive of an immeasurable and unbounded straight line

becoming bounded by merely cutting off a small part and leaving the line bounded by the two terminals so formed. Whether these methods, which attempt to apply the rigid exactness of mathematical science to philosophical theories of space, are valid depends on the extent to which they may be said themselves to postulate such arbitrary assumptions as that space in any way analogous to a sphere or that in I line becomes finite by imagining a point of section.

**Infinite and Infinity** are perhaps the most difficult conceptions mathematicians have to make. Infinity is defined as being that quantity which is greater than every variable quantity and it is denoted by the sign  $\infty$ . It is most easily conceived as a limit, e.g. as the quantities  $\frac{1}{n}$ ,  $\frac{1}{n^2}$ ,  $\frac{1}{n^3}$ , etc. get smaller and smaller, so  $n$  gets larger and larger and the limit to which  $n$

tends as the infinitesimal  $\frac{1}{n}$  tends to zero, is  $\infty$ . In higher geometry parallel lines are those which meet at infinity, and the asymptotes of an hyperbola are the tangents to the curve at points at infinity. In I.C. all points at infinity are on the line at infinity whose equation is  $x + y + z = 0$  and all circles pass through two imaginary points known as the circular points at infinity.

**Infinitesimal**, in mathematics, is defined as a quantity smaller than every assignable quantity. The idea of an I.C. is obtained by supposing a quantity to decrease indefinitely but yet never actually to become 0. In calculations in general an I.C. may be neglected in comparison with finite magnitudes. If  $x$  is an I.C.,  $x^2$  is an I.C. of the second order and similarly may be neglected in comparison with  $x$ . A practical objection is obtained in astronomical problems, the distance of most fixed stars from the earth is very great, and the radius of the earth so small in comparison that it may be regarded as an I.C. neglected in the calculation without any loss of accuracy. The ratio of two indefinitely small increments or I.C.'s, of independent variables expressed as  $\frac{dy}{dx}$ ,

is the basis of the differential calculus.

**Infirmity**, *see* INFIRMITY.

**Inflammation**, term used to denote certain symptoms, which are accompanied by the symptoms of redness, swelling, pain and heat or sensations. It is primarily a protective process by which the body attempts to get rid of some irritating or injurious substance and is a feature of almost every disease and injury. Modern theories tend to attribute the symptoms known as I.C. to reactions between microbes and the white corpuscles. Where the tissues are injured and no germs are present the process often goes on without undue swelling or pain, while any invasion of bacteria is attended by the characteristic symptoms of I.C. sometimes followed by suppuration or the formation of abscesses. The process of I.C. begins with the presence of an excess of blood. The blood stream

is retarded in the region of irritation; this gives the red appearance and also accounts for the sensation of heat. The blood vessels become dilated and there is considerable effusion of white corpuscles through the walls of the vessels. The continuance of the irritating stimuli causes more and more blood to flow to the part with still great effusion of lymph and white corpuscles, so that the part swells, the feeling of heat becomes more intense, and the pain takes on a throbbing character owing to the communication of the motion of the heart to the dilated arteries. The white corpuscles are busy destroying germs, dead tissue is being detached, and new tissue built up; the products of I. are carried away in the blood, or discharged from abscesses, etc. The treatment of I. involves antiseptic dressings in case of skin I., lotions and gargles in the case of I. of the nose and mouth, while if the I. is situated in any portion of the alimentary canal, the natural processes by which waste and injurious products are got rid of may be helped by suitable drugs. To lessen the discharges and subdue the inflammatory process astringents are employed.

#### Inflammation of the Eye, see IRRITIS.

**Inflation and Deflation.** Where a rise or fall in the general price level is due to an increase or decrease, actual or prospective, in the supply of money we have inflation or deflation. Commonly, I. and D. connotes abnormal expansions or contractions of money associated with marked effects on the price level. Slight inflation tends to stimulate trade, since if people expect prices to rise tomorrow they hasten to buy today. Deflation works the other way, since if lower prices are expected buyers will wait. A fall of particular prices does not mean deflation: it may be due to increased efficiency.

Inflation, or rather the policy that makes it inevitable, has great attractions for the statesman. It is a thankless task to refuse claims, eminently reasonable in themselves, for more wages, more salary, more compensation, etc., and a great temptation to follow, in greater or lesser degree, the line of least resistance. But if 'the money is not there' concessions mean its undue creation, and the 'slippery slope' of inflation. While slight inflation may be innocuous if not advantageous, high inflation means total loss of faith in the currency, ruin to those dependent on savings, and general dislocation of business with wages and prices chasing one another in a 'vicious spiral'.

The terms I. and D. came into use in the latter half of the nineteenth century and into general use during the First World War. The paper 'greenbacks' of the Amer. Civil War represented a considerable inflation but the First World War and its aftermath produced inflations of quite a different order. Russia, Austria, and Germany all experienced high inflation. In Germany in 1923 a new mark, the Rentenmark, was introduced, exchanging for one billion old marks. In modern war nations find it increasingly difficult, not to say impossible, to pay

their way by taxation and savings and, to fill the gap, resort to borrowing from the banks (so causing the creation of bank-money) as well as to printing bank-notes. Even so Germany emerged from the First World War with relatively moderate inflation: it was in the special circumstances of the post-war years that the mark became practically worthless.

The following figures of percentage increases in wholesale prices give an indication, by no means precise, of the inflation which occurred in certain countries over a ten-year period (1937-47) covering the Second World War:—

	Per cent
United States . . . . .	76
United Kingdom . . . . .	77
Switzerland . . . . .	101
France (1938-47) . . . . .	889
Japan . . . . .	3,761
Italy . . . . .	5,118
Poland (Cost of living: War-saw only) . . . . .	11,953
China . . . . .	2,631,000

Beside paper inflations on the Ger. or even the Chinese model, metal inflations seem of small account. Nevertheless the Sp. conquest of America brought large quantities of the precious metals to Europe and fed the inflation that fanned trade in Shakespeare's day, besides helping to diminish the value of royal revenues and send the Eng. monarchy to Parliament for more and more money. Again, the discoveries of gold in California and Australia in the middle of the last century inflated the money-basis of the gold standard countries. Later, improvement in mining technique had a similar effect. On the other hand the demand for monetary gold may itself cause a gold deflation, as occurred notably in the latter part of the nineteenth century and again between the wars. Superimposed on such basic movements the 'Trade Cycle' brought its own alteration of I. and D., boom and slump. While the inflations of the Trade Cycle were in no way comparable to the extreme inflations of modern times the loss, unemployment and distress caused by the deflationary phase induced a search for less drastic ways of adjustment. Present hopes are centred in the International Monetary Fund. (See BRETTON WOODS AGREEMENTS, ECONOMICS, AND MONEY.) One point emerges; just as the stability of the paper £ depends on Parliament so, in the last resort, does the continuing decision to remain on a gold standard. A Parliament that in due time takes the necessary steps for remaining on gold should not, alternatively, fail to take the necessary steps to prevent an undue depreciation of the paper £. But Parliament is not uninfluenced by public opinion: under the gold standard deflationary measures were perhaps made more palatable to the wage-earner by judicious reference to the necessities of 'economic law' although this did not prevent strenuous opposition to the wage adjustments that were a part of the gold standard mechanism. If real income has to be cut there is no doubt that inflation will do it less painfully than the gold standard; but

inflation is the 'slippery slope,' and that remains the dilemma.

See H. J. Hawtrey, *The Gold Standard in Theory and Practice*, 1927, 1947; *Report of World Economic Conference*, Geneva, 1927; J. T. Peddie, *The Dual System of Stabilisation*, 1930; L. von Mises, *The Theory of Money and Credit*, 1934; F. Benham, *Economics*, 1938, 1948; G. Crowther, *Outline of Money*, 1911. See also BANKS AND BANKING, CURRENCY; and PAPER MONEY.

**Inflection**, or **Inflexion** (from Lat. *inflectere*, to bend), in grammar, the variations, changes, or modifications of form which words undergo to express various relations with other words of a sentence or clause. It forms an important div. of philology, and is subdivided into conjugation (verbs) and declension (nouns, pronouns, adjectives). Gender, number, and voice, as well as case, tense, mood, and person may be expressed by I., and some grammarians include comparison of adverbs and adjectives also under this head. I. is roughly speaking, a mark of Indo-Germanic and Semitic languages as opposed to agglutinative or analytic. It may be internal, initial, or final in Semitic, but is usually final in Indo-Germanic words, except in cases of 'I' declension. Modern Eng. has comparatively few Is left. See also GRAMMAR, PHILOLOGY. See O Jespersen, *Progress in Language with special reference to English*, 1894.

**Inflorescence**, in plants is the floral region, the mass of flowers, the botanical term to indicate the manner in which the flowers of a plant are grouped. The simplest form of all is a solitary terminal flower, e.g. daffodil, but more often there is a more or less complex system of branching (q.v.) in which the branches do not develop into foliage-shoots but bear flowers. The stalk upon which the flowers are borne is known as the peduncle or rachis; if the flowers spring directly from the peduncle they are said to be sessile, but if they depend from a secondary stalk they are said to possess pedicels. An I. found at the apex of a shoot is terminal, if found in the axils of leaves it is axillary. There are two distinct types of I.; indefinite or racemose, when the flowers at the base open first; and definite or cymose when the flowers at the apex first become mature. One of the commonest forms of the indefinite I. is the raceme, in which the flowers are connected to the peduncle by pedicels, e.g. lily-of-the-valley and birdcherry. The corymb resembles the raceme in being stalked, but the pedicels, produced at different levels, are all of different lengths and the flowers are brought to the same level, e.g. candytuft *Pyrus sortus*. The spike is an indefinite I. with sessile flowers, e.g. plantain and gladiolus, while the catkin is a long, deciduous crowded spike bearing unisexual flowers, e.g. hazel and birch. In the panicle the axis of the I. branches, and each branch forms a raceme, e.g. oats and traveller's joy. In the simple umbel all the pedicels are given off at one level owing to the abbreviation of the mother-axis, e.g. dwarf-cherry and cowslip; in the compound umbel the axis branches in an

umbellate fashion, each branch producing a simple umbel, e.g. hemlock and carrot. The type common to flowers of the family Compositae is the capitulum or head, in which the flowers are sessile and are borne on a shortened mother axis, e.g. *Olearia Haastii* and daisy. The curious I. known as a thyrus is mixed, being a raceme itself composed of short cymes, and is found in the lilac and horse chestnut. A dichasium such as is seen in *Euonymus* is a biparous cyme in which each axis produces two daughter axes and ends in a flower. The I. of the fig is a peculiar, hollow, pear-shaped capitulum, and the flowers are produced internally; this is called a hypanthodium. The verticillaster, common to the dead-nettle and Jerusalem sage, consists of what appear to be whorls of flowers, but these in reality stand one above the other and are borne in the axils of leaves on opposite sides of the stem. Finally, a globose I. consists of a number of cymes united to form a head, e.g. box and nettle. (See illustration, p. 504.)

**Influenza** seems to have been spread through Europe during the Crusades. Supposed to be an infliction of heaven, I. was named the *influentia celi*. From this was derived the It. name *influenza*, first used in Eng. by Huxham in 1767. I. is popularly confused with a severe cold in the head, but although it has many resemblances to catarrh yet there are points of difference. Thus I. brings with it an immediate depression of spirits, and sudden debility. The sense of taste and appetite are lost, the tongue may become white and creamy; while sneezing and running of the eyes are frequent accompaniments. Shivering fits commence the course of the disease, accompanied by a rise in temp., headache, pains and soreness all over the body, while the pulse becomes weak, and the skin, at first hot and dry, becomes moist. In ordinary cases the acute symptoms pass away after three days or more, when with care convalescence begins. There are always dangers of relapse, and premature exertion may easily bring on heart disease or even wreck the nervous system. I. is an epidemic (often a pandemic) disease, and spreads very rapidly. The atmospheric condition with which it is connected is not known. It may occur in all kinds of weather. It is known, however, to travel generally westwards or from S.E. to N.W. Thus the great epidemic of 1889-90 started in the Far East and spread rapidly over all Europe, and became the worst epidemic experienced for forty years in Britain. Since then it has appeared epidemically annually in some part of the Brit. Isles.

In treating for I. the patient is immediately put to bed in a warm room and fed with light food frequently. Complete rest is the main point, the remainder of the treatment being symptomatic. Thus warm bags of salt ease the aching limbs, while drugs such as phenacetin and antipyrin are sometimes used with great care. Stimulants are used, but only in small quantities after food has been taken. Purgatives are used at the commencement of the attack, and in cases where cardio



TYPES OF INFLORESCENCE

A Raceme—Bird Cherry. B Panicle—Traveller's Joy. C Corymb—*Pyrus sorbus*. D<sup>1</sup> Catkin—Hazel. D<sup>2</sup> Single male flower of Hazel Catkin. E Umbel—Dwarf Cherry F Capitulum or Head—*Olearia Haastii*. F<sup>1</sup> Stamens and pistil of inner florets. F<sup>2</sup> A single ray floret. G Thyrsus—Lilac. H Dichasium—*Euonymus*. I Hypanthodium—Fig. I<sup>1</sup> Single female flower. I<sup>2</sup> Single male flower. J Verticillaster—Jerusalem Sage. J<sup>1</sup> Longitudinal section of same. K. Glomerule—Box.

irregularity occurs, heart tonics are administered. Then in the convalescent stage, rest and the moderate use of stimulants, together with nerve tonics like preparations of iron, quinine, and strychnine, or hypophosphates, etc., are the best means of overcoming the resultant debility. A sea voyage or a few weeks at a watering-place is, however, the best cure.

During recent years, efforts have been made to collect accurate statistics relating to I. and to trace its cause. Recent pandemics have been preceded by scattered cases, and evidence shows that the first great wave of the disease is characterised by symptoms of severe and acute fever, with little affection of the upper respiratory tracts. These are much more definitely affected during the second wave, following about two months later, in which bronchitis and pneumonia are common secondary developments. Later may follow a third wave, usually less severe, and characterised by tendencies to catarrh and pulmonary trouble. In some pandemics there have been waves of gastro-intestinal and of nervous types. In epidemics of I. the predominant bacteria found in individuals suffering from the disease are *Bacillus influenzae*, discovered in 1892 by Pfeiffer, various streptococci, and *Bacillus pneumonius*, but none of these seems to be invariably present. Falk and his colleagues, working on the I. epidemic in Chicago (1928-29) identified a streptococcus which they believed to be the primary infective agent. It is known now, however, that the cause of I. is a filter-passing virus originally discovered by Dr. C. E. Andrewes. The viruses of influenza are minute creatures, a fraction of the size of germs such as those that cause boils, and they pass easily through the pores of such fine filters as earthenware rods which can hold up the larger bacteria. Immunisation, such as is practised for diphtheria, smallpox, and other illnesses, can be provided for I., but there are greater practical difficulties in making anti-I. vaccines. For the viruses have to be grown on hens' eggs and the supply of sufficient of these to produce sufficient vaccine for a whole pop. poses practical problems. The immunity against I. can, as yet, be made to last only a few months and would have to be renewed by injections several times a year. The I. Unit of the World Health Organisation is engaged in research on this subject.

Diagnosis of the disease, though comparatively easy during epidemics, is still unreliable in isolated cases because the symptoms of the various forms of I. are so diverse. The view that these diverse forms are manifestations of the same disease, varying in character and intensity, is an outcome of the work mainly of Brit. epidemiologists. See BACTERIA and EPIDEMIOLOGY.

**In Forma Pauperis** ('in the character of a poor man'). Any person may sue or defend an action as a pauper on proof that he is not worth £25, his wearing apparel and the subject matter of the cause only excepted. Before being allowed to appear *in forma pauperis* as a plaintiff a person

must lay a case before counsel for his opinion as to whether or not he has reasonable grounds for suing as a pauper; and no person may sue as a pauper unless the statement of the case laid before counsel for his opinion, together with the counsel's opinion and an affidavit by himself or his solicitor that the statement of the case sets out fully and truly all the material facts to the best of his knowledge and belief, are produced to the court or judge to whom the application to sue *in forma pauperis* is made. No court fee is payable by a person admitted to sue or defend *in forma pauperis*. Where a person is admitted to sue or defend *in forma pauperis*, the court may, if necessary, assign him counsel or solicitor, or both, to assist him, and these latter may not refuse assistance, except for good reason shown. Any person who agrees or endeavours to take or obtain any fee or reward from a person admitted to sue or defend *in forma pauperis* for the conduct of the business as to which he has been so admitted is guilty of contempt of court (*q.v.*); and if the pauper litigant agrees to give any fee, he will be at once disentitled to sue or defend in the same case as a pauper. It is the duty of the solicitor assigned to a pauper litigant to take care that no notice is served, or summons issued, or petition presented without good cause. See also POOR PRISONERS' DEBTLINE.

**Information:** (1) Mode of proceeding against persons accused of crimes other than felonies. It is a speedy process, which brings an offender to trial without a previous finding by a grand jury. Such criminal Is. are of two kinds: (a) Is. *ex officio*, and (b) Is. by the Master of the Crown Office. The former may be used in certain cases of misdemeanour, such as seditious libels, or riots, oppression, and bribery by magistrates or other officers, or other misdemeanours tending to the disturbance or danger of the gov., where the circumstances are such that the ordinary delays incidental to legal process must be avoided. In form an *ex officio* I. is a formal written charge of an offence filed by the attorney-general in the King's Bench Div. A Crown Office I. is filed in the King's Bench Div. by the Master of the Crown Office on the application of a private individual. Leave of court must first be obtained. Such Is. are only granted in the case of suggestions of the commission of misdemeanours of a gross and notorious kind, *e.g.* aggravated libel, bribery at elections. In practice Is. for libel are only granted where the person libelled occupies a public office or position. After a criminal I. of whatever kind has been filed, the accused is tried in the usual way by a petty jury. (2) A charge made to a justice of the peace or stipendiary or other magistrate of some offence punishable on summary conviction. A justice cannot issue warrant for arrest in the first instance, except upon an I. or complaint in writing made on the oath of the informant or other person on his behalf. Where a summons only is issued in the first instance the I. need not be on oath or in writing. See Archbold's *Criminal*



INIA RED PHOTO TALLY

This view was taken from the air over the Cumbria and Lancashire area. It was taken with a 16mm film camera and the film is in the hands of the Ministry of Information. The photograph shows the river and the island in the center. The island is covered in trees and is a very important part of the landscape. The river is very wide and the water is very calm. The surrounding land is flat and appears to be agricultural or undeveloped land. The photograph is a very good example of the type of photography that the Ministry of Information has been able to produce.

#### Plugging Inlet at 11 - General Russell, On Crimes

Information, Central Office of (established April 1, 1946) is a unit of the Ministry of Information. Its main functions are to act as the central government agency for the preparation of publicity material requested by departments, including advertisements, films, photographs and exhibitions. Its offices are at Norgby House, Baker St., London, W. 1.

Information, Ministry of (brought out of the shadow of the public eye and existed as a shadow organization for more than a year before it became an important government in Sept. 1939). Lord Macmillan in the first minister was in office in the outbreak of war until the fall of 1940 when he was succeeded by Sir John Perth. Five months later Mr. Duff Cooper took charge and continued till July 1941. There was considerable criticism when it was announced in Nov. 1939 that the staff numbered no fewer than 999, and there were allegations of time wasting and ineptitude. When Mr. Brendan Bracken became minister in July 1941, the staff in London and in the regional offices and abroad totalled over 5200 and the wage bill was £2,721,000 a year. By that time, however, the M.O.I. had become a smooth working and efficient organization. Almost every aspect of Brit. publicity was dealt with by the M.O.I. The depts. in Mallet Street,

London, included the press and censorship organization, film publicity and a reference library of newspapers from all over the world. On every important development of the war new paper representatives in the Ministry building were summoned to the war room where the information was read to them and from the conference hall of the leading personalities of the world then stories to the pressmen and replied to the questions raised by the latter. The govt. in Dec. 1941 decided to bring the M.O.I. to an end and to set up in its place a departmental information service. It was replaced by a central office with special services both for home and overseas. (M.O.I. INFORMATION CENTRAL OFFICE, 1941).

At the outset the M.O.I. was expected to bring home to German citizens the evils of the regime they were upholding by war. To put British policy before the neutrals and above all to win the fullest possible support in the U.S.A. and to keep up the spirit of our own people. To carry out these aims it was very properly decided from the start that the M.O.I. should send out plain truth and not seek to outdo Dr. Goebbels in his methods of blazen mendacity. If our methods did not at first seem to pay it was largely because no counter-propaganda could effect much in the days when Germany was winning cheap and easy victories against small nations. Moreover, these methods were often misconceived. It was often erroneously assumed that the opinions of all





of volatility of the substance. When it is necessary to boil the mixture the process is known as decoction; this is often accompanied by chemical changes in some of the substances concerned.

**Infusoria**, term applied to numerous classes of active protozoa appearing in stagnant infusions of animal or vegetable matter. The majority of them occur in great numbers, and are provided with vibratile locomotor processes of their living matter, which are practically permanent, and express the predominantly active constitution of these cells. When dirty water is held in a glass vessel between the eye and the light *I.* are generally quite visible, though most of them are microscopic. They occur both in fresh and salt water.

**Ingatestone**, small tn. of Essex, 6 m. S.W. of Chelmsford. It has an interesting Norman church with a fifteenth-century tower, and Rom. bricks have been set in the walls by the builders. An Elizabethan manor-house was a refuge for Rom. Catholic priests during the Reformation. Pop. 2300.

**Inge, Very Rev. William Ralph, Eng.** divine, *b.* 1860 at Crayke, Yorks.; eldest son of Rev. Wm. Inge, D.D., provost of Worcester College, Oxford. Educated at Eton and King's College, Cambridge—where his career was brilliant. He was assistant master at Eton 1881-88; fellow and tutor of Hertford College, Oxford, 1889-1901; Lady Margaret prof. of divinity Cambridge, 1907-11; dean of St. Paul's Cathedral, 1911-31. In theology, *I.* is an extremely liberal Protestant—holding miracles and all such materialistic adjuncts of religion very cheap. But what makes him one of the most prominent clerics in England is his insistence, in learned books and popular journalism, on Platonic principles as guides to Christian practice. His apparent opposition to democracy, combined with his dry and austere manner in the pulpit, earned him at one time the sobriquet of the 'Gloomy Dean.' His writings include: *Society in Rome under the Caesars* (1886), *Eton Latin Grammar* (with Rawlins, 1889), *Christian Mysticism* (1899) *Faith and Knowledge* (1901), *Studies of English Mystics* (1906), *Truth and Falsehood in Religion* (1906), *Faith* (1909), *Spectrum Animæ* (1911), *Types of Christian Sanctity* (1915), *The Philosophy of Plotinus* (1918), *Outspoken Essays*—(first series, 1919), (second series, 1922), *The Victorian Age* (1922), *Personal Religion and the Life of Devotion* (1921), *The Platonic Tradition* (1926), *Lay Thoughts of a Dean* (1926), *The Church in the World* (1927), *Christian Ethics and Modern Problems* (1930), *God and the Astronomers* (1933), *A Rustic Moralist* (1937), *A Pacifist in Trouble* (1939), *The Fall of the Idols* (1940), *Mysticism in Religion* (1947), *The End of an Age and other Essays* (1948). An excellent selection from his works is *Wisdom and Wisdom of Dean Inge*, by Sir James Marchant, 1927.

**Ingelheim**, two small mkt. tns. of Germany adjoining each other in the Rhine-land-Palatinate, formerly republic of Hesse-Darmstadt, about 8 m. W. of Mulnz. At

one time they were celebrated for the palace of Charles the Great. Pops. 5100 and 1100.

**Ingelmuuster**, tn. of Belgium in W. Flanders, situated 7 m. N. of Comtraal, on the canal from the R. Lys to Rooselare, with manufs. of carpets, linen, lace, velvets, and silk. Pop. 9000.

**Ingelow, Jean** (1820-97), Eng. novelist and poetess, *b.* in Boston, Lincolnshire. She pub. her first poem, *A Rhyming Chronicle of Incidents and Feelings* (1850), anonymously. Her poems are characterised by their novelty and charm, and her novels also are worthy of attention. Among her works are *Poems* (1863), which contained 'The High Tide on the Coast of Lincolnshire, 1571,' one of her best; 'A Story of Doom' (1867), 'Deborah's Book and the Lonely Rock' (1867), 'The Grandmother's Shoe' (1867). Among her novels are: *Mopsy the Fairy* (1869), *Off the Skellips* (1872), *Edna to be Free* (1875), *Don John* (1876). See *Some Recollections of Jean Ingelow and her Early Friends* (London), 1901.

**Ingenohl, Friedrich von** (1857-1933), Ger. admiral, a great favourite of the Kaiser Wilhelm II., whose yacht he once commanded. He was commander-in-chief of the Division previous to his appointment to the Supreme Command of the Ger. High Sea fleet in 1913. He was still in command on the outbreak of the First World War. His policy of raiding with cruisers such as the Dogger Bank (*q.v.*) was not approved owing to its costliness, and in consequence he was placed on the retired list, being succeeded by Adm. von Scheer.

**Ingersoll, Robert Green** (1833-99), Amer. lecturer and lawyer, *b.* at Dresden, New York, the son of a Congregational minister. He practised law in Illinois, and in 1867 went to Peoria. In 1862 he became a colonel in a cavalry regiment, and not long after was made attorney-general of Illinois. He became known by reason of his lectures directed principally against Christianity. Among his writings are: *The Gods and other Lectures* (1876), *Some Mistakes of Moses* (1879), *Great Speeches* (1887). See E. G. Smith, *The Life and Reminiscences of Robert G. Ingersoll*, 1901.

**Ingersoll**, tn. of Oxford co., Ontario, Canada. It stands on the Canadian National and Canadian Pacific Railways, and on the Thames R. It manufs. agric. implements and furniture. Cheese, butter, and grain are produced in the dist., and there are flour and planing mills. Pop. 5900.

**Inghirami, Tommaso** (surnamed *Fedra* from his success as Phædra in Seneca's *Hippolytus*) (1470-1516), poet, orator, and humanist of an It. noble family. Seven of his Lat. orations were pub. at Rome in 1777, and Erasmus says he was called 'the Cicero of his age.' Julius II. made him keeper of the Vatican library. He left MSS. of a *Commentary on Horace's 'Ars Poetica'*, and *Abstract of Roman History*.

**Ingleborough**, hill in the W. Riding of Yorkshire, England, about 17 m. S.E. of Kendal. On the S. is Ingleborough Cave containing stalagmites and stalactites, and

on the top of the hill are the remains of an old camp. Alt. 247 ft.

**Ingleford**, see HUNTERDON.

**Ingleton**, vil. of the W. Riding of York shire. Ingleton situated on the Great about 10 m. N.W. of Settle. In the vicinity are situated limestone caves. Pop. 2,500.

**Inglis, Charles** (1734-1816). Anglican bishop b. in New York. He was a clergyman during the War of Independence and went to Halifax when the Eng. evacuated New York. Consecrated in 1778, first bishop of Nova Scotia; he was thus the first Eng. colonial bishop.

**Inglis, Elsie Maud** (1864-1917). Scottish woman surgeon. b. at Nantulm, India. Second daughter of John and the David Inglis. Indian Civil Service. She spent part of her childhood in India. Qualified 1892. Joint surgeon, Edinburgh Disp. Hospital for Women and Children. On the outbreak of the First World War formed Scottish Women's Hospital. In Serbia 1915 she helped to aid the English wounded with wounded at Krushatz. On her return to England returned home in 1916. Sent to Arras to help the French with hospital work to attend the St. Mary Div.

**Ingolfsby, Thomas**, BAFHAM, LANC. AND HANTS.

**Ingoltsch**, a town of the Baviaria, Germany, standing on the left bank of the Danube, 15 m. N.W. of Munich. It contains an old castle and was famous in the 16th century, founded in 1122, when many great scholars were students. Pop. 10,000.

**Ingot**, cast mass of metal from a furnace, especially a cast mass of heavy silver metal, square or rectangular, a cast block of gold, silver or alloy, either for coinage or for working into other forms. Any mould is of use in which metal is cast into blocks.

**Ingram, Arthur Foley Winnington**, WINNINGTON, ENGLAND.

**Ingram, John Kells** (182-1907). Irish author and economist, regius prof. of Greek at Trinity College, Dublin, in 1866 and vice-provost in 1878. His *Political Economy*, contributed to the *Encyclopædia* was published in 1888, and from that time, eight European languages and into English. Other works are: *History of Slavery and Serfdom* (1888), *Outlines of the History of Religion* (1900), *Human Nature and Morals according to Aristotle* (1901), *Practical Morals* (1904) and *Final Transition* (1905). As an undergraduate he produced *The Memory of the Dead or Who Feels to Speak of Ninety Eight?* (1851), a poem adopted as the anthem. See C. J. Faulkner, *Memor. of John Kells Ingram* 1907. Sir R. Palgrave, *Dictionary of Political Economy* (App. 1908).

**Ingres, Jean Auguste Dominique** (1781-1867). Fr. painter b. at Montauban. In 1796 he became a pupil of David, and in 1801 was successful in obtaining the Grand Prix. In 1806 he proceeded to Rome where he studied and worked until 1820, leaving in that year for Florence. Here he stayed four or five years and then returned to Paris. While in Italy he had carefully studied Raphael, and he brought

the latter's influence to bear upon David's teaching. He again visited Rome and finally returned to Paris in 1811, having been made grand officer of the Legion of Honour. Among his pictures are 'The Vow of Louis XIII.', 'Apocryphus of Homer', 'Stratonicus', 'Odipus and the Sphinx', 'The Odipus'. He is



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**Inghulph** (d. 1100), abbot of Crowland in Lincolnshire, conferred on him by Wm. of Normandy who executed his father, was a monk. He had before this visited the Holy Land on a pilgrimage and on his return had joined a monastery in Normandy. The *Historia Monasterii de Crowlandensis* printed by Henry Savile (1596), but which there is a letter by Riley in 1841. Antiquarian Library (1841) once attributed to him is a very old letter to be the work of some later writer and merely a forgery. See W. C. S. *Inghulph and Crowland* (1894).

**Inhabane**, a port situated on the bay of the same name, situated in Port Natal, East Africa. It has a large trade with India rubber and copal. Pop. 10,000.

**Inheritance**, in law, term restricted to the legal right to property by descent, or by extension to the property inherited from law differentially from Eng. law, two important subjects. (1) In Eng. law the word 'heir' and its derivatives is confined exclusively to the person who, prior to 1925, was entitled on an intestacy to the real estate and any title or dignity and hereditary passing with the estate, (2) the maxim *Nemo est heres viventis* (no one is the heir of a living person) is rigidly applied so as to exclude a prospective heir or possible heir from any rights in the

property until the death of the ancestor. As a corollary of (1), it is to be observed that a person named in a will of readyty is by Eng. law a *devisee* and not an heir; in Rom. law the term 'heir' applied indiscriminately to all who, being in the power of the head of the family, had a natural claim on his property. Irrespective of whether they took under a testament or on intestacy. To exclude effectually his own heirs, the testator had to do so by name in the will. But it was essential to institute an heir of some kind, for a Rom. testament was of no effect unless there was such a person to succeed to the *persona* of the testator, i.e. to continue his legal existence after death. Later, excluded children were given the right to impugn the will if omitted in it, and recover a certain share of the property. In Eng. law the fundamental difference in the canons of descent to real property from the Rom. and systems founded on the civil law is that the rule of primogeniture has prevailed from remote feudal times until the Administration of Estates Act, 1925. The old rules of descent to freeholds of 1. were these: (1) Descent is traced from the last 'purchaser' (a technical term meaning the person who last took in any other way than by descent); (2) descent is to the lineal issue in *in finitum*; (3) males are preferred to females; primogeniture determines the male entitled, but females succeed equally as co-parceners (*q.c.*). (1) Remoter lineal issue 'representing' their own parents (who would if not deceased have succeeded to the property) take *per stirpes*, i.e. as opposed to taking *per capita* or in their own right. (2) the nearest ancestor takes on failure of lineal issue. The rules of intestate succession are now uniform for both real and personal property. See SUCCESSION, INTESTATE. See also GAVELKIND, BOROUGH-ENGLISH.

**Inhibition**, used in a technical sense of the sentence passed upon a clergyman, by which he is prevented from the exercise of his eccles. functions. It can therefore be used as a weapon for enforcing the laws of the church, also a writ to prevent a judge from proceeding further in a case.

In psychology, the word used for a subconscious urge to express the personality in some way which the conscious mind forbids.

**Inia** (*Inia geoffrensis*), toothed freshwater dolphin, found in the lakes near the Cordilleras and in some of the upper tribs. of the Amazon, where it is regarded with superstition by the Indians. It is about 8 ft. in length, has a long cylindrical snout with stiff hairs, and only the merest rudiment of a dorsal fin. It is generally found in troops of three or four and is hunted on account of the oil it yields. It feeds chiefly on fish.

**Inisfail**, see INISFAILL.

**Inishkeel**, ls. of Ireland, belonging to co. Donegal, and situated in Gweebarra Bay, with a capacious harbour.

**Inishmaccourt**, par. of Ireland on the Erne, partly in co. Donegal and partly in Fermanagh. It is named from an abbey founded by St. Neen in the sixth century.

**Inishmore**, ls. of Ireland, situated at the mouth of Galway Bay. It is 9 m. in length and 2½ m. in breadth, possessing two natural harbours on the N. coast.

**Initial**, first letter of a word, especially of a name. Ornamentally arranged, they are a feature of Irish (see KEILS, BOOK OF), and Carolingian book decoration, often of full page size and rich in colour. In the text of the Incunabula (*q.c.*) they were usually inserted by hand, later with woodcuts (*e.g.* Holbein's *Dance of Death*) or copper engraving, fitted to the typographic style. See also CAPITAL; ABBREVIATIONS.

**Initials**. In some cases signature by 1. constitutes a good signature in law. Section 12 of the Civil Procedure Act, 1883, provided that in all actions upon written instruments it should be sufficient to designate any of the parties by their initials, but the section is now obsolete. There are decisions to the effect that signature by 1. is allowable in the case of memoranda and agreements comprised under the Statute of Frauds (see FRAUDS, STATUTE OF). By the Wills Act, 1837, a will or codicil may be validly signed by 1. only. Probably there are no documents which in the eye of the law must be signed in full, although it is clearly unwise from the point of view of identification not to do so. A deed certainly requires no signature, the traditional essentials of every deed being no more than sealing and delivery. In Scots law 1. also constitute a good signature of a deed, but the genuineness of the 1. must be proved.

**Initiative**, in legislation it is a commonplace of political science that very few constitutions are really so framed as to ensure the representation of the views of the majority of the electorate upon any one particular issue. Some deny that a representative chamber like the Eng. House of Commons is returned for the purpose of effectuating the will of the majority upon every single issue, on the ground that legislative authority and omnipotence rest with Parliament and not with the electorate, and it is further asserted that any relation of agency as may subsist between the electorate and its representatives subsists only so far as the latter can be said to be entrusted with a mandate for carrying out a general party policy. Sir A. Dicey points out that it is inconsistent with the legal notion of Eng. parl. sovereignty to suppose that parl. electors have any legal means of initiating, sanctioning, or repealing the legislation of Parliament, because the opinion of the electorate can only be expressed through Parliament. Not that this view of the functions of the electorate is by any means essential to a representative polity, for in Switzerland all parl. deliberation is regarded as purely preliminary, and by the process of the Obligatory Referendum of legislative proposals, a legislative measure even after being passed by the Federal Assembly, must on the demand of a certain number of citizens be submitted to the electors for formal approval before it can become law. This, indeed, was done in the times of anct. Rome in the question literally asked of the people, 'Jubetane 1'.

Some of the Swiss cantonal constitutions go even further than this by the device of the right of *I*. This right makes it incumbent on the legislature to publish proposals advocated by a certain proportion of the electorate, and cause them to be voted on at the local polling stations. It must be conceded that *I* ensures the literal observance of the will of the majority, but it is questionable whether it is a sound political expedient to cast on the people at large the actual business of law making. Practised politicians must almost of necessity be better able to formulate the general aims of the majority in detailed proposals than the people themselves. Moreover, the people are apt to be so blinded by prejudice or party passions as to be incapable of weighing up all that can be said for and against a proposed law, and certainly it must hamper indefinitely the work of legislation in every important amendment suggested at any stage of a Bill has to be referred to the electorate for approval. Sidgwick, inspired by Bentham, advances the ingenious solution of making a members' election annually renewable with a view to deferring the final ratification of the legislative measures of the year until the election so that in the interim the people may have an opportunity for cancelling any unpopular legislative innovation. For a full discussion of the question of the control of the people over government see H. Sidgwick *Elements of Politics* 1891 ch. xxviii.

**Injection**, act of introducing a substance into one or other of the cavities of the body, or of the substance injected. The substance is generally employed as an aqueous solution and is intended to have a curative effect by direct action on the organ into which it is injected or to which it is readily conveyed by the natural processes of the body. Hypodermic *I*s are made by piercing the skin and introducing the active substance into the subcutaneous tissues by means of a small syringe. Intravenous *I*s are the introduction of a solution directly into a vein. Intramuscular *I*s are the introduction of a solution into the substance of a muscle. Vaginal, rectal and anal *I*s are other forms.

**Injector**, apparatus for forcing water into a boiler against the pressure of the steam. M. Henri Coffard invented an *I* in 1858 which is now generally used. Steam from the boiler passes into a conical pipe the size of the opening of which can be regulated by an adjustable cone. As the steam rushes out of this it meets the feed water, and is condensed, so creating a partial vacuum, which causes the water to rush in with a very great velocity and to pass down another conical pipe. The escaping steam behind helps to drive it down this pipe. As it emerges from the narrow end of this conical pipe it passes into the narrow end of another one. So, as it passes on down this expanding cone, its velocity slackens and the pressure increases. So the water is forced into the boiler through a non-return valve. This *I* may be worked either by exhaust steam from the engine or by steam from the boiler.

**Injunction**, in Eng. law, a remedy given as a rule by a court of equity (*q.v.*) to restrain one or more of the parties in an action from doing or allowing their agents or servants to do an act which the court holds to be inequitable in regard to the rights of the other party. The *I* was one of the modes by which the chancery built up his whole equity jurisdiction (see CHANCERY CHANCERY, JUDICIAL). By this weapon the equity courts could override the common law whenever the latter was in conflict with the dictates of good conscience. The *I* in such cases was issued in the form of a prohibition commanding the plaintiff not to go on with his action at common law on pain of imprisonment for contempt of court if he disobeyed. It is either (a) *interdictatory* or prohibitory, or (b) *final* or *perpetual*. An *interdictory I* is satisfied on merely *prima facie* evidence, and for the purpose of preventing further damage to the plaintiff pending the ultimate decision of the dispute. It is usually only granted on the plaintiff giving an undertaking to pay damages if he does not succeed at the trial in making good his claim. *Final or perpetual I*s are the final and finally settle the right of the parties. *I*s are either negative or the command a person to forbear from doing an act. But a mandatory *I* is one which commands a positive act, e.g. to build a building erected in contravention of the rights of another. But even a *I* which is negative in form may have an indirectly positive effect, e.g. an *I* restraining A from performing in breach of his contract with B, for any other man, as than B will usually have the effect of enabling A fulfil his contract rather than be out of employment. *I*s may be granted to restrain the continuance or threatened infringement of almost all kinds of rights.

**Injuries to Property, Malicious**, see MALICIOUS.

**Ink**, material used for producing records on paper and similar substances. The earliest varieties appear to have been prepared by suspending some carbonaceous material such as soot in a sticky solution (gum or varnish) and either the secretion of the cuttle fish or sepia was used. In the Middle Ages there first came into use an *I* composed of a decoction of gill nuts or other tannin yielding substance, mixed with iron salt. The use of these depended upon the formation of a bluish substance which on oxidation (that is, exposure to the air) was converted into a black substance. The modern 'blue black ink' consists entirely of the same ingredients, but a ferrous salt is used, and the development of the black colour only takes place after a longer or longer exposure to the air. In order that the writing may be visible before oxidation a colouring matter usually some indigo derivative is added. This causes the blue appearance first noted and subsequent oxidation causes the black to appear. In the preparation of such *I*s, either China or Turkey galls are usually employed. These are ground, steeped in water, and to the aqueous extract a solution of ferrous sulphate (green vitriol or copperas) is added.

At first a clear solution of a dark blue colour is obtained, but from this there gradually separates a black insoluble precipitate. In order to keep this in suspension gum arabic or some other viscous material is added. The *I* soaks into the paper and is there oxidised, but the presence of the gum gives to the writing a 'shiny' appearance. In order to avoid this certain *I*s are made by using indigo sulphonic acid (prepared by dissolving indigo in strong sulphuric acid) to which is added metallic iron. Ferrous sulphite is thus formed and when the excess of acid is neutralised by means of chalk, the clear supernatant liquid obtained on allowing the mixture to stand, yields on mixing with a tannin solution a clear freely flowing *I*. Certain conditions require to be fulfilled before an *I* can be described as satisfactory. It should be non-corrosive, non-poisonous, permanent, not easily faded and non-fermentable. The last requirement is usually fulfilled by the addition of some antiseptic such as phenol or thymol.

**Coloured Inks**—These are usually aqueous solutions of the soluble coal tar colours. Thus solutions of the eosins and rhodanines give red *I*s, brilliant green and indigo preparations etc. are used for the printing of blue and blue *I*s respectively. Further blue *I* is made from Prussian blue dissolved in oxalic acid. So-called gold and silver *I*s are obtained by mixing the finely divided metals or their substitutes with gum and a solution of a soluble silicate. The initial colour of the ink is usually strengthened by the addition of blue aniline dyes, but these have not the permanence of the iron compounds. But inks for temporary purposes can be made by simply dissolving such dyes in water.

**Copying Inks** are made by the addition of gelatine, gum or dextrin to a concentrated soluble tannin *I*. Addition of the materials greatly retards the oxidation of the tannate of iron by forming a film over the surface of the writing. This dissolves when the damp tissue paper is applied and an impression is thereby obtained.

**Printer's Ink** usually consists of a varnish-like material made from resin, soap, and a drying oil in which is suspended a colouring matter. For black a mixture of lamp-black and indigo (the latter in small amount) is used. Reds, blues and yellows are obtained by means of curcume, Prussian blue, and lead chromate, respectively. Other colours may be prepared by suitable mixtures of the above.

**Marlin Inks** nearly always contain some silver salt as a basis. A solution of the salt mixed with gum gives on contact with organic matter, such as cotton or linen, a tan which on exposure to light or heat or both gradually becomes black. The stain is indelible, but in course of time fades to a brownish colour.

**Sympathetic Inks** are those which become visible only after suitable treatment. Thus a solution of galls may be used for writing. Thereby is produced a writing which on washing over with a weak solu-

tion of an iron salt becomes dark. If a solution of a cobalt salt be used for writing no characters are visible until the paper on which the writing has been made is warmed. The characters then appear blue. Such inks are of no practical use, but figure as of importance in fiction.

**Inkerman**, vil in the Crimea, lying E. of Sebastopol. Here on Nov. 5, 1854, the *I* met the Russians in battle, and after a brave resistance, and when defeat seemed imminent, were reinforced by the *I* and gained the victory. There are ancient cave dwellings at *I* and it is a noted place of pilgrimage.

**Inland Linoleum**, see under LINOLEUM.

**Inland Revenue, Board of**, had its beginning when Commissioners of Stamps were appointed in 1631 in the reign of Wm. of Orange. Twenty-five years later in 1719, Commissioners of Taxes were appointed. These commissioners worked independently of each other until 1854, when a Consolidated Board of Stamps and Taxes was established. The next big change took place in 1819 when the Commissioners of Taxes were absorbed by the Board, which now adopted its present title. In 1905, however, all matters connected with Taxes were transferred to the Board of Customs. The three sources of Inland Revenue are at present Death Duties, Stamp and Taxes, Salaries and expenses of the Board for 1916 were £16,200,000. The chairman is paid £2,000 per annum and deputy chairman £1,000. The seat of the Board is at Somerset House Strand London W.C. (S. E. of *I* and CUSTOMS DUTIES, INCOME TAX, ESTATE AND INLAND TAXATION).

**Inland Sea**, see of Japan situated between the main is. on the N. and the is. of Shikoku and Kyushu on the S. It is about 240 m. in length and its greatest breadth is 10 m. Its shores are especially beautiful, and the water is very calm.

**Inland Water Navigation**, see under CANALS.

**Inlaying**, method of ornamenting flat surfaces by the inserting in one material a substance differing therefrom in colour or nature. Thus the basis may be of wood, metal or stone and inlaid or encrusted material of different wood or of ivory, marble, tortoise shell, precious metal, etc. The art of *I* is practised in the fabrication of furniture and artistic objects of various kinds. *I* in wood is generally known as 'marquetry' (*q.v.*), in metals it is termed 'dunastaining' (*q.v.*) and in marble and precious stones it forms a variety of 'mosaic' (*q.v.*) work.

The word *I* is, however, generally understood to be limited to the first of these three. It consists in the fitting together, to form patterns, of differently coloured pieces of wood. In the Stuart period a good deal of *I* was executed in England upon cabinet, chests of drawers, etc. In Italy the most beautiful examples of the art are on junks or chest-stalls, and in Germany, musical instruments, chests, and cabinets are often lavishly inlaid.

**Inman, Henry** (1801-16), Amer. artist, b. at Litcha, New York, studied under Jarvis. Distinguished principally for his

portraits of Amer. and Eng. statesmen and men of letters.

**Inn, riv.** in Austria, one of the chief tributaries of the Danube. It rises in the Engadine, Switzerland, and flows through the Tyrol and Bavaria, its total course being estimated at about 310 m. Innsbruck is on its banks.

**Innate Ideas** in the philosophy of Descartes are the clear axiomatic principles whose certainty cannot be doubted. They are not only certain, but universal, and as they are not the result of empirical experience, they may be regarded as the primitive germs of or the irreducible minimum of truth, which nature has planted in the human intellect, and which, obscured in part by errors due to bodily conditions, the mind would find clearly within itself if it were freed from disturbing influences. Hobbes describes this kind of reasoning as merely metaphorical, and considers that there is no criterion for distinguishing this assumed clearness; to which objection Descartes replies that there is a distinction between a natural inclination to believe a thing which may nevertheless be false and a natural light which makes us know a thing to be true; which reasons he at first seems to be super-added metaphors. Descartes, eschewing all false reasons, applied his principles to the study of mathematics, and made remarkable progress therein; but the study of mathematics is one which peculiarly lends itself to mechanical application. In the study of the relation of mind to body, Descartes was not prepared to carry out his conception to its final consequences; since to do so would be to deny altogether the influence of the will upon our actions; hence he formulated a theory that the mind can and may interfere in reflex actions, but that the mind possesses the power of pure thought in its own right. Locke, as a typically Brit. practical philosopher, denies the existence of I. I., and asserts that all our knowledge comes from sense experience, the mind being only *tabula rasa*. Leibniz opposed this whole conception of images impressing themselves upon the blank mind from external objects as the basis of all our knowledge, though he agrees with Locke that, in point of time, sensations precede the relating activities of the mind. Locke practically ignores the reaction of the mind itself in knowledge; Leibniz deems this reaction the one essential thing. But while we may admit that all truths come to our knowledge only through experience, there may still be certain truths which may properly be called innate. In other words, the vague concept 'experience' demands a closer, more subtle definition than Locke gave it, and this was supplied by later philosophers like Hume and Kant. Locke's criticism of I. I. has, indeed, no force against the theories of Oer. Idealism; for, according to Kant, experience itself would be impossible unless it were possible for the mind to pass judgments transcending experience. With Kant, perception does not conform to the nature of objects, but the sensible object conforms to the constitution of our faculty of per-

ception. Eng. philosophical thought is essentially utilitarian, and therefore opposed to the theory of *a priori* and innate truths—an attitude which explains the popularity in England, for a time, of the positivism of Comte or any other system of philosophy which seems to favour progress irrespective of the forces of tradition.

**Inner House**, see COURT OF SESSION.

**Inverleithen par. and tn.** of Peebles and Selkirk, Scotland. The par. has an acreage of 23,981, and is intersected by the Leithen Water. There is a medicinal spring containing sodium and calcium chlorides. It is one of the centres of the Scottish woollen industry. Pop. 2300.

**Innes, James Dickson** (1887-1911), Eng. landscape painter b. at Llanelly in Carmarthen, of Catalan descent on his mother's side. He studied art at the Slade School, and exhibited chiefly at the New English Art Club. His earlier landscapes were painted in South Wales, and his later on the Mediterranean slopes of the Pyrenees. His ability and originality exercised a strong influence on the work of his younger contemporaries.

**Inner Temple**, see INNS OF COURT.

**Inness, George** (1825-91), Amer. landscape painter, generally regarded as the greatest; b. at Newburg, New York; studied in America, but travelled in Europe. Among his works are: 'Autumn Gold' 'Under the Greenwood,' 'Passing Storm,' 'Moonrise.'

**Innisfail**, used in poetry as a synonym for Ireland, and means 'the island of the fair.' The 'Fall' or 'Lac-fail' is the stone which, since 1296, when Edward I. carried it off from Seone, has rested under the coronation chair in Westminster Abbey. Legend tells that it was on this stone that Jacob fell asleep when he dreamt of the flight of stairs reaching to heaven, and that the Dedamans carried it to Ireland and set it up as the 'inauguration' stone at Tara.

**Inniskillin Fusiliers, The Royal.** Raised in 1790 from the forces which defended Enniskillen for Wm. III. The first and second battalions were respectively the 27th and 108th regiments of Foot. The regiment fought at the Boyne and Siege of Limerick, in the 1715 Rebellion in Scotland, and at Culloden, 1746. After the Maida campaign it went to the Peninsula then to Waterloo. It took part in two S. African campaigns before going to India for the Mutiny. During the First World War it fought in France, Flanders, Macedonia, Gallipoli, Egypt, and Palestine. After the war it was reduced to one battalion, and linked with the Royal Irish Fusiliers (q.v.) to form one corps.

**Innocent**, the name of thirteen popes:—**Innocent I.** (402-17), native of Albano. He upheld firmly the authority of the Rom. see, both in the W. and in the E., and was strenuous in enforcing the celibacy of the clergy. He was canonised.

**Innocent II.** (*Ingriorio Papareschi*) (1130-43) was elected on the death of Honorius II. He had, however, to flee from Rome on sev. occasions owing to Anacletus having been elected by a rival faction.

**Innocent III.** (*Lotario di Conti*) (c.1160-1216) succeeded Celestine III., and under him the power of Rome reached its greatest height. He exercised his papal jurisdiction (1198-1210) over the kings of France and Spain, and compelled King John of England to receive Stephen Langton as archbishop of Canterbury. See A. Luchaire, *Innocent III., la papauté et l'empire*, 1906; C. H. L. Plrie Gordon, *Innocent the Great*, 1907; L. E. Binns, *Innocent III.*, 1931.

**Innocent IV.** (*Sinibaldo Fieschi*) (1243-54), b. at Genoa. He was compelled to leave Rome on account of the quarrel which was being waged between himself and Frederick II.

**Innocent V.** (1245-77) b. at Tarantaise, was pope for five months in 1268, and was a native of Savoy and the successor of Gregory X.

**Innocent VI.** (*Etienne Aubert*, 1332-62) Frenchman, b. at Monts, in Languis, the successor of Clement VI. He brought about a number of reforms in the papal administration, and did a great deal for its benefit.

**Innocent VII.** (*Cosimo dei Migliorati*) (1404-06), some writers have given a favourable account of him, but most agree that he was guilty of nepotism.

**Innocent VIII.** (*Giovanni Battista Cibo*) (1484-92) b. at Genoa in 1452. In a bill of 1484, he instigated very severe laws against witches in Germany, the principles enunciated by him being, later, embodied in the *Malleus maleficarum* (1487).

**Innocent IX.** (*Giovanni Antonio Fachinetti*) was elected pope in 1591 and died just after.

**Innocent X.** (*Giovanni Battista Pamphili*) (1611-55), b. at Rome in 1574, did something towards reform, and was entirely opposed to Jansenism.

**Innocent XI.** (*Bindetto Odescalchi*) (1679-89), b. at Como in 1611. He was a zealous reformer, and most of his time was taken up with the quarrel against Louis XIV., who laid claim to the right of the king to appoint to benches. This led to the Declaration of Gallican Liberties.

**Innocent XII.** (*Antonio Pignatelli*) (1691-1700), b. at Naples in 1643, made peace between France and the Papacy.

**Innocent XIII.** (*Micheleangelo dei Conti*) (1721-24) was under the sway of Spain and France.

**Innocents' Day.** This is the Eng. name for the festival which is celebrated 25 Dec., in commemoration of the massacre of the children of Bethlehem by Herod. It was probably first celebrated towards the end of the fifth or early part of the sixth century. In the Lit. Church it is known as the Feast of Holy Innocents, Mass being said in purple vestments, probably because the Innocents 'did not enter heaven till Christ at His Ascension opened it to those who believe.' In the Gk. Church, the feast is celebrated on Dec. 29, being known as the Feast of the 14,000 Holy Children. Also known as Childermas.

**Inns and Innkeepers.** An inn may be defined as a place which supplies lodging,

accommodation, and food for passengers, travellers, and wayfarers. It is immaterial whether the place is called an inn, coffee-house, or by any other name, in fact it is an inn. An inn is to be distinguished from a tavern, the latter being strictly an alchouse and victualling house combined, but primarily and essentially a place where liquor is sold. The sale of liquor is not the characteristic of an inn, and there are great numbers of places in Britain which are inns although they have no licence to sell intoxicants. The proprietor of a tavern is under no obligation to supply even a traveller with refreshment, and indeed no one has a right to insist on being served in either a tavern or alchouse, but it is an indelible offence, and also actionable for an innkeeper to refuse to supply accommodation and victual at any hour of the day or night to a traveller who is ready to pay and who conducts himself properly. But the innkeeper may refuse if he has not room, or if the traveller or intending guest is an objectionable person, such as a thief, prostitute, or person suffering from contagious disease. An innkeeper is only bound to receive and lodge a guest so long as the guest retains his character as such. Merely purchasing temporary refreshment or putting up a man's horse is enough to make a man a guest. At common law the liability of innkeepers was so wide that a guest could recover for loss or damage to his property in almost all cases where the innkeeper was unable to prove that the loss was due to the guest's default. But by the Innkeepers Liability Act, 1863 (section 1) an innkeeper is not liable to pay more than £50 for loss or injury to articles or property brought by guest, unless the property (1) is a horse or other live animal, or a carriage and gear, (2) was stolen, lost, or injured through the willful act, default, or neglect of either of the innkeeper or his servants, (3) was expressly deposited with him for safe custody. To obtain the benefit of the Act an innkeeper must put up in some conspicuous part of the entrance hall of the inn a copy of Section 1 of the Act. If a guest refuses to pay his bill the innkeeper has a lien on his luggage or other articles brought to the inn by the guest, whether such articles are the property of the guest or not. Hence a commercial traveller's stock in trade can be seized. If the bill be not paid in six weeks, the innkeeper has, by an Act of 1878, the right, after advertising in a London and local newspaper his intention, at the end of that time to sell the articles and repay any surplus to the defaulting guest. See C. C. Ross, *Law Relating to Innkeepers*, 1928; and R. Watson, *A Scrapbook of Inns*, 1919.

**Innsbruck**, cap. of the prov. of Tyrol in Austria. It is named from the chief bridge over the Inn, on whose r. b. it lies. The situation is a splendid one, for the broad valley from which the city rises is guarded on all sides by lofty heights. Here the high roads from Bregenz in the Vorarlberg and from Germany on to Italy over the Brenner Pass cross one another, a fact which accounts for its strategic import-



ance. The interest of the tn. is mainly archaeological. The cenotaph of the Emperor Maximilian I. (d. 1519), which, with its marble sarcophagus and twenty-eight bronze mourners, is one of the finest illustrations of sixteenth-century sculpture, is in the Franciscan church (1509-93). There is also a univ. (originally founded in 1677), having 195 teachers and 1567 students. It also possesses a good library with 360,000 vols., and the Landhaus or the Diet is here. Pop. 62,000.

**Inns of Court.** There are four I. of C., Gray's, Lincoln's, Middle, and Inner Temple. To become a member of the Eng. bar it is necessary, besides passing certain examinations in law, to be admitted as a member of and to keep twelve terms (extending over a period of three years) at an I. of C. The I. of C. are a kind of legal univ. of London, in which the barristers and students correspond respectively to graduates and undergraduates. There were formerly a number of small inns, such as New Inn, Staple Inn, and (Wifford's Inn), all of these have either been bought up or in some other way acquired by the four remaining I. of C. With the dissolution of 'serjeants' inns disappeared the ancient status of 'serjeant', commemorated in the humorous characters of Serjeants Buzluz and Snubbin in the *Pickwick Papers*. All the existing I. of C. are corporate bodies owning (prior to the First World War) valuable property, and appointing from time to time 'benchers' out of their own members to form the executive bodies of the societies. Twenty benchers, five from each Inn, co-opted from time to time, form the Council of Legal Education. The benchers may disbar a barrister for professional or other serious misconduct. Intending equity and chancery practitioners usually join Lincoln's Inn, the two Temple Inns being the best for common law business. Gray's Inn apparently offers the best scope for scholarships and students' prizes. A time-honoured feature of the I. of C. is the keeping terms, not by residence or attendance at lectures, but by 'eating dinners' in the halls, the total number being six of each term; but there are certain exemptions; studentship and first class honours men gaining a remission of two terms, and univ. men need only dine on three nights each term. See also *LIA AT EDUCATION*.

Disastrous damage was done to property in the I. of C. by Ger. air raids on London (1940-11). Large portions of Gray's Inn were completely destroyed. The famous Hall of the Middle Temple and the libraries of both the Middle and Inner Temple were gravely damaged; while large blocks of chambers were completely demolished. The Round Church in the Inner Temple was also partly destroyed. Lincoln's Inn was hit by a flying bomb (Aug. 1941). Windows and woodwork of the Gatehouse of 1518 and of 'Old Buildings' sustaining damage.

See S. Ireland, *Picturesque Views: an historical account of the Inns of Court, 1800*; J. B. Williamson, *The History of the Temple, London, from the Institution of the Order of the Knights of the Temple to the*

*close of the Stuart Period, 1924*; E. Williams, *Early Holborn in the Legal Quarter of London, 1927*; W. Kent, *Lost Treasures of London, 1947*.

**Innuendo**, in the language of pleading in an action of libel or slander, means a paragraph in a statement of claim which seeks to put on the words complained of a more defamatory meaning than is warranted by natural construction. The defendant may traverse or deny the I., and yet pay money into court by way of amends. But he must then make it clear that the money is paid in by way of reparation for the words in their natural meaning, and not in that alleged by the plaintiff.

**Innuity**, see *ESKIMO*.

**Innyootta**, see *HINGANHIAT*.

**Inoculation**, communication of disease accidentally or intentionally to a healthy subject by the introduction of certain products of disease into the body through the skin or the mucous membrane. The chief diseases so transmitted in man are anthrax, hydrophobia, smallpox, and syphilis. Before Jenner introduced vaccination (q.v.), I. of smallpox was practised. The disease as thus transmitted was far less dangerous than the ordinary smallpox, and, further, rendered the inoculated subject much less liable to a future attack. Its disadvantages are obvious, in that it tended to keep the disease alive, and further to increase its spread, but it was invaluable to those who had been inoculated, and was of great service prior to Jenner's discovery. In 1810 the practice of I. with smallpox was forbidden by law. Pasteur's treatment for hydrophobia and all serum injections are based on a similar principle to that explained above.

**Inonu, Ismet (b. 1881)**, Turkish statesman, original name Ismet, one of many children, of a prov. family of E. Anatolia. After a harsh youth, passed into the Cadet Corps. Politically suspect, he was virtually exiled as a second lieutenant in Tripoli. Stayed there for eleven years; then served with much distinction in the short disastrous war against it. Agression. Promoted captain and fought in the first Balkan war. As a major of the General Staff he reorganised the Dardanelles defences which made it possible for Kemal to foil the Brit. attack in 1915. In the First World War, served on all fronts, becoming major-general and a pasha, and as under-secretary for war being charged with the demobilisation of a beaten and demoralised and disease-ridden army. After the Gk. attack on Smyrna, he answered Kemal's call for resistance by making his way in the ranks of a peasant private to the conceded headquarters of Kemal, who appointed him his Chief of Staff. After a period of unrelieved misfortune came triumph, when on March 31, 1921, the Turks, under I. defeated the Gks. at Inönü a victory which marked the renaissance of Turkish national pride and self-reliance. Yet his greater service was really diplomatic; for as head of the Turkish delegation to Lausanne, he achieved a resounding success. I. had made himself a national hero; Lausanne made him an international figure. In

1924 Kemal made him prime minister and in the ensuing thirteen years he created Turkey's modern administration. The nationalisation and development of Turkey's railways was, perhaps, his outstanding internal achievement. His foreign policy was based on friendship with Russia, even against the convictions of his passionate chief Kemal. Resigned after the Alexandretta (*q.v.*) affair, but his restraint brought its reward. After Kemal's death I. was elected his successor without any serious competition (1938), and became known as Inonu. He was re-elected in March, 1943.

**Inorganic Chemistry**, see under CHEMISTRY.

**Inosite**, or **Hexahydroxycyclohexane** ( $C_6H_{12}(OH)_6$ ), a sweet crystalline substance, melting at  $253^\circ C.$ , that is found widely distributed in the animal and vegetable organisms, especially in conifers.

**Inowroclaw**, see HONEN-SALZA.

**Inquest**, see CORONER.

**Inquisition** (Fr. *inquisition*: Lat. *inquisitio*, a seeking or searching for). In ordinary language, particular inquiry, search stimulated by curiosity or hidden motives. In law (1) a judicial investigation, inquiry, examination, an inquest; (2) the verdict of a petty jury under a writ of inquiry. 'An inquisition of office is the act of a jury summoned by the proper officer to inquire of matters relating to the crown, upon evidence laid before them' (Blackstone, *Comment.* bk. iv., ch. xxiii.). The institution known as the I. was an eccles. tribunal first outlined at the synod of Toulouse in 1229, and estab. by Pope Gregory IX. after the conquest of the Albigenes in 1233. A committee consisting of sev. respectable laymen and the parish priest was ordered to be set up in every parish to search for and bring heretics before the bishops. Soon afterwards inquisitors were specially appointed by the Pope from the Dominican and other orders, but these did not supersede the bishops' courts. Persons accused of heresy were examined privately, and if sufficient evidence was found against them they became liable to eccles. penalties. If they remained impenitent the severest eccles. penalty, *viz.* excommunication, was pronounced against them and they were handed over to the civil authority for capital punishment. The eccles. penalties ranged from the enjoining of certain good works (*e.g.* almsgiving) to imprisonment for life. Informers' names were kept secret; torture was resorted to to extract confession, while the death penalty usually took the form of burning. The I. was set up in Italy, Spain and its dependencies, Portugal, and France, but not in England, where heretics were tried by the ordinary tribunals. It flourished chiefly in Spain, owing to the numbers of Jews and Mohammedans settled there, who, while outwardly conforming to Christianity to avoid persecution, practised their own religion in secret and plotted extensively against the unity and safety of Christendom. According to Peschel's calculations about 2000 persons suffered death between 1181-1501 when Isabella

died. This was the period of the Grand Inquisitor Torquemada (1181-98). The Sp. I. was suppressed by Napoleon in 1808, revived by Ferdinand VII. in 1814, and was finally abolished by the Cortes in 1831. In France it was used by Philip le Bel for the suppression of the Knights Templars, but soon fell into disuse. In modern times the I. in Rome is called the Holy Office, and is composed of cardinals, judges, consultants and other officials, under the presidency of the Pope, but its activities are confined to the censorship of books and matters relating to church law and eccles. offences. Death was regarded as the penalty for heresy by Catholics and Protestants alike in the sixteenth century, but the Sp. I. has come to be regarded almost as a synonym for religious bigotry coupled with gross inhumanity.

**Insanity**, unsoundness of mind. It is hardly possible to provide a satisfactory definition of I., as it includes many widely differing states of body and mind, and excludes many forms of aberration which are associated with more or less transient diseases. When any injury is sustained by the cortex of the brain or when poisonous matters are carried to it by the blood stream, clinical experience tells us that a disturbance of consciousness occurs. The delirium of the fever patient is due to his brain being temporarily poisoned, and a number of cases of more permanent forms of I. can be traced to definite lesions of the brain. Such conditions are often accompanied by purely physical symptoms, so that the hypothesis that I. depends ultimately upon physical causes is not altogether unjustifiable.

**CAUSES OF INSANITY.** Mental defect or disease is associated with some inherited or acquired peculiarity of brain constitution. If statistics be of any value at all, the relation of I. to hereditary nervous weakness is well estab. The descendant of insane parents may be normal and even extraordinarily capable, but there is great likelihood of some indications of want of nervous balance showing themselves, and his general condition may be represented as a susceptibility to invasion by the agents that produce mental instability, just as a child of consumptive parents, though apparently healthy, is assumed to be less likely than others to resist invasion by the tubercle bacillus if he allows the conditions to become favourable for its development. Among other general causes of I. may be mentioned the increasing stress of civilised life. There is a fear that I. is increasing rapidly among civilised nations, and although statistics do not show that any real increase has taken place, there undoubtedly is a greater tendency to nervous diseases which demonstrates that the nervous mechanism is being over-wrought in a number of cases. The belief that there is a relation between the stress of modern life and the incidence of mental disorder was apparently confirmed by the great increase of mental disorders during the First World War particularly among soldiers. The general body of expert opinion, however, inclines to the view that the conditions of warfare were the occasion, rather than the

cause, of the 'war shock' (traumatic neurosis). The report of the Board of Control for 1930 (pub. in 1931) comments on the continued increase in lunacy, the number of notified insane persons under care in England and Wales showing, in the six years under review, an average annual increase of about 2000. But the Board found no justification for the suggestion so commonly made that the pace of modern life conduces to mental breakdown, though present day conditions of urban life might and probably do, tend to increase the frequency of some minor nervous disorders. Opinion as to the place of alcoholism in the causation of I is divided. So many cases show a history of alcoholism, and its effects on the nervous system are so pronounced that many claim alcohol to be the commonest cause of I. On the other hand the cause may be confused with the effect, the lack of control which makes the confirmed drunkard a characteristic symptom of an unsound mental constitution. Consanguinity, or marriage of near relations is adduced as another cause. Here again, the probability is that if the parental lust is free from I, there is no particular tendency in that direction. The offspring. Mental feebleness is perpetuated in many of our families by the intermarriage of related persons with this or that deficiency, such persons are often responsible for much larger families than the average. The immediate cause of I may be toxic poisoning through defective metabolism or through actual infection by micro organisms. Such forms of I as follow certain fever, influenza, typhoid fever, or syphilitic infection, are undoubtedly due to the presence of toxic substances in the blood. It has been further suggested that worry, violent emotion, etc. by their effect on metabolism induce changes in the blood which may ultimately cause a physical condition of the brain involving I.

**General Symptoms.** Of the mental symptoms the most definite are persistent delusions or hallucinations. A delusion is a false idea, as when a patient thinks he is some great personage, or that there is a conspiracy against his life. A hallucination is false perception, as when a patient sees visions, or hears voices which have no foundation in reality. It must not be thought that all insane persons suffer either from delusions or hallucinations of a definite type. Mental instability shows itself in extreme impulsiveness in action, leading sometimes to sudden attempts at suicide. In some forms of I it is almost impossible to keep the patient's attention for more than a few seconds; he is at the mercy of every chance impression. On the other hand, some patients cannot be roused out of an obstinate introspection. Memory is often disturbed, being either abolished or restricted to remote events. Of bodily symptoms the most characteristic is sleeplessness, and the recurrence of the habit of sleep is generally a sign of improvement. A rapid pulse rate and general lack of control of muscles are usually to be found in most types of I.

**Classification.**—There is no universally accepted classification of the types of Insanity, but the following outline of a simple scheme (Henderson and Gillespie) is similar to that adopted by the Royal College of Physicians (England) in its Nomenclature of Diseases.

- 1 *Affective reaction types* (a) Manic Depressive, (b) Involutional Melancholia
- 2 *Schizophrenic reaction types*
  - 3 *Paranoid and Paranoid reaction types* (a) Paranoid, (b) Paraphrenia, (c) Paranoid states (with or without hallucinations)
  - 4 *Idiocy*
    - 5 *Mental Deficiency* (a) Idiocy (b) Imbecility (c) Feeble-mindedness
    - 6 *Organic reaction types* (a) Acute (b) Chronic (c) *Unsettled* (e.g. some cases of alcoholic delirium)

The *Organic reaction types* are subdivided as follows: (1) Psychoses with focus: (a) Endotoxaemia (diphtheria, typhus, etc.) (b) Exotoxaemia (alcohol, organic metal poisons, etc.) (2) Psychoses with infections: (a) General (b) Local (brain infections comprising Syphilis, General Paralysis, Cerebral Syphilis, etc.) (c) Local (Tuberculosis, Meningitis, tubercular meningitis, etc.) and Abscesses. (3) Psychoses with primary degenerative brain changes: (1) Psychoses with general metabolic deficiency: (a) Pellagra (b) Myxoedema (c) Cretinism (4) Psychoses with brain trauma (5) Psychoses with organic brain diseases, e.g. brain tumours (6) Psychoses with chronic general diseases, e.g. cardiovascular diseases, infectious diseases, etc.

The term *Manic Depressive Psychosis* is applied to disorders of affect either of the mania or depression which were formerly termed *Mania* and *Melancholia* in the belief that they were quite separate diseases. The characteristic symptom of Mania are: (a) a state of speech and activity, (b) without any justifiable cause either in the conscious content of the external circumstances. In addition suspicion, irritability, a clouding of consciousness, delirium, depression and hallucinations may all be present for a time, particularly at the height of the illness. The onset is usually acute and the bodily manifestations are restlessness, insomnia and loss of weight.

*Melancholia* is characterised by persistent depression. The patient is miserable, introverted, solitary and retarded. Hallucinations and delusions (usually hypochondriacal, self-acusatory or persecutory) may be present. The most important consideration from the point of view of cure and treatment is the danger of suicide.

*Involutional Melancholia* is a term, which in its strictest application is reserved for a group of cases of both sexes occurring at the involutional period, who have never previously suffered from any form of mental illness. Its features are

depression without retardation, anxiety, a feeling of unreality and hypochondriacal and nihilistic delusions.

*Paranoia* is a chronic form of mental disease which has an insidious onset and is characterised by delusions, which are closely related, unchangeable and bound up together into a system. The term Systematised Delusional Insanity is sometimes given to Paranoia and distinguishes this psychosis from other mental diseases in which the delusions are multiple, variable and unsystematised. Delusions may be of grandeur and power or of persecution or jealousy. When delusions of persecution are present, there is considerable danger of violence as the patient may attack his supposed persecutors or attempt suicide to escape from them. *Schizophrenia* is a psychosis which occurs most typically in adolescents and young adults and is characterised by emotional apathy, absorption in phantasy to the exclusion of normal social activities, by delusions and hallucinations, and a deterioration in mental efficiency which may terminate in severe dementia. In its typical form it consists in a slow steady deterioration of the entire personality and manifests itself in disorder of feeling, conduct and thought and in an increasing inability to make effective contact with reality. Four varieties have been described: (1) Simple, (2) Hebephrenic, (3) Katatonic, (4) Demential paranoïdes. *Paraphrenia* is a progressive delusional condition, accompanied by hallucinations of various senses and, in due course, by a varying degree of mental deterioration. The condition has been said to lie midway between dementia paranoïdes and paranoia in the age of onset and the severity of its symptoms. *General Paralysis of the Insane* is an inflammatory and degenerative disease of the brain of syphilitic causation, which is characterised by progressive mental deterioration and definite physical signs and serological findings. It usually manifests itself from five to twenty years after infection but a few cases have been recorded where the disease made its first appearance thirty or more years after infection. It is commoner in males than in females, develops insidiously and its course is frequently marked by remissions. The earliest signs are usually changes in the patient's personality, (changes in behaviour, character and mood) of which the patient is commonly unaware. There is increasing disorientation, particularly for time and progressive impairment of memory. A feeling of euphoria, coupled with grandiose delusions of bizarre type may be present or the patient may exhibit intense depression, even amounting to stupor and mutism. In the depressed type the ideas expressed are frequently absurdly nihilistic and grotesque. In the terminal stage of dementia the patient leads a purely vegetative existence. The disease is world wide and its appalling social significance cannot be overstressed. Syphilis transmitted to the offspring may give rise to juvenile general paralysis.

**TREATMENT.**—Studies of mental disorder carried out in connection with hypnotism led to the attempt to use suggestion, and persistent suggestion still plays a great part in the treatment of mental patients. Progress towards an understanding of the true character of mental disorder resulted in the realisation that the insane man was a sick man, in need of care and supervision in place of discipline (or as in former times, punishment) and restraint. A welcome change appears to have taken place in the attitude of the general public towards 'nervous' and mental disease. There is an increased readiness to seek expert advice and treatment early and the old fear of social stigma appears to be almost eliminated. Probably more than any other single factor, the extensive use of psychiatry in the three Services during the Second World War contributed to this desirable development. For the first time, psychiatry in the Services was fully organised and developed. Special hospitals for the treatment of neurosis and psychosis were established both at home and overseas. At home, psychiatrists were attached to the various Military Hospitals, area psychiatrists worked in each command, Military Prisons were visited and psychiatric opinion and advice made available at Officers' Selection Boards, Intake centres, Courts Martial etc. Overseas, the work was often carried out in the extreme forward areas. The result was that in the Services large numbers of the Medical profession and an immense cross-section of the general pop. became familiar with the aims, uses, methods, and benefits of psychiatry, and after their return to civilian life they were not slow to take practical advantage of this knowledge. Further, the experience gained in the organisation of war-psychiatry proved of great value in organising the extension and elaboration of civilian psychiatry which took place after the end of the war. The modern mental hospital provides its inmates with as great a measure of freedom as possible, and with great variety of occupation.

Besides rest and occupational therapy special methods of treatment have recently been introduced, which have yielded valuable results. The methods of treatment now in use include (1) Insulin therapy, (2) Cardiazol therapy, (3) Electric convulsion therapy, (4) Prefrontal leucotomy, (5) Continuous paroxysms, and (6) Narco-Analysis. Insulin therapy, which involves the production of a hypoglycaemia by means of insulin, has proved especially valuable in schizophrenia, particularly in young patients treated early in the disease. Cardiazol also has yielded good results in certain cases. With electric convulsion therapy the best results have been obtained in depressions, including involuntary melancholia. This treatment, which can be given as an outpatient procedure, is now practised at the psychiatric clinics at most large general hospitals. The operation of prefrontal leucotomy involves the severance of the association paths between the frontal lobes and the thalamus. The general aim

of the operation is to modify the disordered behaviour of those psychotic patients whose illness has been of prolonged type. Generally speaking the possibility of serious and permanent damage to the mental functions renders it advisable to reserve the method for cases where all other suitable methods have been tried and failed, where there is no reasonable hope of spontaneous recovery, and where the patient is quite incapable of useful occupation or a modest enjoyment of life. Modern practice involves the attempt on the part of the medical man to understand his patient, and to learn through the discovery of the purposive character of his symptoms, obsessions, and delusions, the real character of the inner conflict which they simultaneously express and conceal (cf. the psychological teaching of Freud and his followers). There is still a difference of opinion as to whether there is a distinct break between the neuroses or nervous disease and the psychosis of insanity proper, or whether the psychoses which are not due to actual lesions are merely developments of the neuroses. According to some writers there is a mental difference between the two though it is admitted that in the end stages of dementia praecox, manic depressive insanity, paralytic insanity, diagnosis is very difficult and judgment who are really in one may be regarded as different. On the other hand it is undeniable that many patients who were diagnosed as insane have been considerably benefited by psychoanalytic treatment and some have even been cured. These differences of opinion, however, have not stood in the way of the acceptance of the view that mental disorder of any kind calls for psychological understanding, and psychological treatment. The psychological study of abnormal mental functioning has developed into a specialised branch of medical science under the name of psychiatry (1).

#### DEFINITION OF INSANE PERSONS—S. LUNACY ACT.

INSANITY AND CRIMINAL RESPONSIBILITY.—It is a fundamental principle of English law that every person of the age of discretion is sane and is accountable for his actions until the contrary is proved. The burden of proving the incapacity or mental defect is placed on the prisoner, and it is for the jury to determine as a question of fact whether the defence have proved that the prisoner was insane at the time when he committed the crime. The tests to be applied by the jury were formulated over a century ago in consequence of a plea of *Insane* in the case of *R. v. M'Naghten* (1843). The Rules formulated by the judges to whom the House of Lords addressed a series of questions on the law of insanity laid down four propositions which could be used as a guide where *Insane* is pleaded and which can be summarised (1) the fact that a person who knows that he is acting contrary to law does so under an insane delusion of revenge, or a delusion that his act is a benefit to the public, is no defence if that person, even though

partially deranged, knows that he is doing something unlawful at the time of the commission of the act. (ii.) the test of *Insane*, which ought to be submitted to the jury, as a direction from the judge on the law, was held to be that 'To establish defence on the ground of insanity, it must be clearly proved that at the time of committing the act the party accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know that he was doing wrong.' (iii.) if a person is under a delusion as to the facts which excited at the time of his wrongful act but is not otherwise insane his liability for those acts must be considered on the basis of his liability had those circumstances been real. (iv.) a medical witness who has been present throughout the trial cannot properly be asked his opinion as to the state of the accused's mind at the time of the commission of an alleged crime as this would be usurping the question which it was for the jury to decide, but it is still convenient to allow such a question where the facts are not in issue and the question is substantially one of matter of science.

The rules have long been subject to criticism by legal and medical writers. The non-acceptance by the law of the defence of uncontrollable impulse (for example in cases of shoplifting where a person is clearly suffering from kleptomania but still knows that he is doing wrong) which has often been strongly attacked by eminent members of the medical profession. Similarly the law has not accepted a defence of moral insanity where the intellectual faculties are sound, and where there is knowledge of the acts performed, but the moral appreciation is affected or affected. Moral insanity is, however, recognised under the Mental Deficiency Acts, 1890 and 1912. Where a person is mentally defective and has a predisposition to criminal propensities which have existed before the act of commission the court has power to order confinement in an institution or place for defectives under the care of a guardian. Moral delinquency or sadistic or sexual perversion is not full within the Rules or M'Naghten's case unless the person either does not know what he is doing, or does not know that what he is doing is wrong and therefore cannot form good grounds for a defence. (1) The defence of *Insane* in answer to a criminal charge is one of general application and is not confined to cases of murder. It is, however rarely pleaded as a defence to charges of less gravity because the consequences to verdict of guilty but insane, for a finding of this special verdict entails an order that the accused be kept in custody during His Majesty's pleasure. See also CRIMINAL LAW, LUNACY ACTS, MENTAL DEFICIENCY ACTS.

See B that *The Psychology of Insanity* 1912. J. C. Goodwin, *Insanity and the Criminal*, 1923. J. MacCurdy, *The Psychology of Emotion*, 1925. W. MacDougall, *Outline of abnormal Psychology*, 1926. A. Bjerre *The Psychology of Mur-*

der, 1927; A. J. Rosanoff, *Manual of Psychiatry*, 1929; S. Thalbitzer, *Emotion and Insanity*, 1926; R. G. Gordon, *The Neurotic Personality*, 1927; Isobel Hulton, *Mental Disorders in Modern Life*, 1910; R. D. Gillespie and D. K. Henderson, *A Text-Book of Psychiatry*, 1911; C. P. Blacker, *Neurosis and the Mental Health Services*, 1916.

**Inscribed Stock**, see REGISTERED STOCK. **Inscriptions** (from Lat. *in*, 'upon' and *scribere*, 'to write') is the term given to records, cut, engraved, or moulded upon hard material such as stone, metal, or clay. They are found on rocks, on slabs of stone, on temples, tombs, or anct. buildings, on vases, seals or gems, on copper plates, on iron or bronze tablets, on gold, silver, brass, crystals, ivory, and so forth. In the Bible, there are numerous references to writing on stone: the 'tablets' on which Moses received and afterwards re-wrote the Law on Mount Sinai were slabs of stone (*Exod.*, xxxi, 18 and xxxiv, 1), and (in *Deut.*, xvii, 2-3) Moses was bidden to 'set up great stones and plaster them with plaster' that they might have a surface capable of taking a legible text of the Law; also Joshua 'wrote upon the stones' a copy of the Law of Moses (*Josh.*, viii, 32). Clay was the most common writing material among the anct. Mesopotamian peoples (see under CUNEIFORM WRITING) and was also used in Syria (at Ras Shamrah, the anct. Ugarit, a particular cuneiform alphabet was employed) and in Crete, where many thousands of clay tablets have been unearthed, as well in some other Near E. countries. Bronze was used by Gks., Etruscans, and Romans as a material on which to engrave votive f., laws, treaties, and other solemn documents. The Chinese earliest extant written documents are either on bronze or on bones. The most noteworthy characteristic of the 'pre-historic' Indus Valley civilisation (q.v.) in the middle of the third millennium B.C. is the still undeciphered script preserved in about 500 finely cut seals of stone or copper. India, and especially S. India, is particularly rich in inscriptions of all kinds. The importance of the S. Semitic f. can be gauged when we consider that practically all we know of early S.-Arabian hist. and that of pre-Islamic N. Arabia, is based upon them. Indeed, these numerous S. and N. Arabian f. are our main source for the study of the once flourishing kingdoms, whose splendour has been immortalised by the Biblical account of Solomon and the Queen of Sheba. Also the numerous inscribed *stelae* and stone 'altars' and the inscribed polychrome clay pottery of the anct. Mayas (Central America), as well as the wooden tablets of Easter Island inscribed in a 'mysterious' script may be mentioned.

Until the end of the nineteenth century when people spoke of 'ancient history' they usually meant the hist. of anct. Greece and Rome; it was thought that nothing could be known about the earlier times except what is found in the pages of the Bible. In the early nineteenth century very little was known about

the early Near E., the cradle of our W. civilisation. The general reader hardly realises that during the last century the fields of space of time open to the eye of man have been wonderfully extended owing largely to the discovery and the decipherment of numerous f. The civilisations of Egypt, Mesopotamia, Indus Valley, Syria, Asia Minor, Arabia, Crete, etc., previously entirely unknown, or at best known only from the facts transmitted through the Bible or Graeco-Rom. writers have been brought into the full light of hist. Scores of scripts and languages, some of which are not connected with any surviving tongue, have been deciphered; grammars and dictionaries of previously unknown languages have been written; and many aspects of historical cultures have been constructed only on the basis of f. For example, we know vastly more about the reign of Hammurabi of Babylonia, eighteenth century B.C., than we know about the reign of King Alfred of England.

Consult: *Corpus Inscriptionum Graecarum* (Berlin, 4 vols.) 1825-77, and its successor, *Inscriptiones Graecae* (Berlin, 14 vols.) *Corpus Inscriptionum Latinarum* (Berlin, 1862); *Corpus Inscriptionum Semiticarum* (Paris), 1885 f.; *Corpus Inscriptionum Indicarum* (Calcutta and Oxford), 1877 f.; *Corpus Inscriptionum Etruscarum* (Leipzig), 1893 f. For cuneiform f. see W. Wright, *Facsimiles of Manuscripts and Inscriptions*, 1875-1883; D. A. Chyvolson, *Corpus Inscriptionum Etruscarum* (St. Petersburg), 1882; E. Hübner, *Monumentalinscripten über die*, Berlin, 1893; *Corpus Inscriptionum Hittiticarum*, (Berlin), 1900 and 1906; *Epigraphia Zeylanica* (Oxford), 1901; A. J. Evans, *Scripta Minora*, 1909, and *The Palace of Minos at Knossos*, 5 vols., 1921-35; *Hieroglyphic Texts from Egyptian Sites* (cf. in the British Museum, 1911-1914); *Epigraphia Birmanica* (Rangoon) 1919; S. G. Morley, *The Inscriptions at Copan*, 1920, and *The Inscriptions of Palen*, 5 vols. (Washington), 1938; *Hittite Texts in the Cuneiform Character* (Brit. Museum), 1920 f.; G. Coedès, *Recueil des inscriptions de Siam* (Bangkok), 1924 f.; E. A. Wallis Budge, *The Rise and Progress of Assyriology*, 1922; *Corpus Inscriptionum Etruscarum* (Leipzig), 1926 f.; *Corpus Inscriptionum Hittiticarum* (Berlin and Leipzig), 1928 f.; J. Drieger, *Le langage antique égyptien* (Florence), 1934. For bibliography on f. see H. Arntz, *Handbuch der Ritenkunde* (Halle), 1935; R. A. S. Macalister, *Corpus Inscriptionum Insularum Celticarum*, vol. I. (Dublin), 1915. See also ALPHABET, CUNEIFORM WRITING; ETRUSCAN LANGUAGE AND WRITING; GAELIC LANGUAGE AND WRITING; GREEK, *Greek Language*; HIEROGLYPHIC, HIERATIC AND DEMOTIC WRITING; HEBREW LANGUAGE AND WRITING; HITTITE, LATIN LANGUAGE AND WRITING; OGHAM; PAHLAVI; RUNES; and WRITING.

**Insect Bites and Stings.** The greatest danger from insect bites and stings lies in the disease-producing organisms that the insect may carry. In this way mosquitoes carry malaria; fleas, plague; lice,

typhus fever; and so on. The biting insects which directly give most trouble to man are gnats, mosquitoes, fleas, lice, and bed bugs. With their piercing mouth parts these insects puncture the skin and then suck blood through the proboscis. Gnats and mosquitoes pour a little saliva into the wound, so irritating it and promoting the flow of blood to the surface. Biting of gnats and mosquitoes may be reduced by drainage of marshy places and standing water. Fish and aquatic insects that will eat the larva should be kept in standing water that is needed for any purpose. Strong essential oils such as oils of lavender and eucalyptus will keep away gnats, mosquitoes, and fleas. Bites should not be rubbed. Irritation may be allayed by bathing with a cooling lotion and the application of ammonia. If the wound becomes septic hot treatment should be applied. To drive away fleas clothes and even the body may be dusted with fresh pyrethrum powder. The modern insecticides (*see*) such as D.D.T. are also very effective. Dogs should be frequently washed with a good disinfectant dog soap. Bugs may be exterminated by fumigation with sulphur. In Great Britain, stinging insects are bees, wasps, occasional hornets, and ants. If the stinging insects in the flesh it should be flicked off with a quick lateral movement of the finger nail and ammonia or sodium bicarbonate solution applied. Pressing on, or rubbing, the wound is to be avoided so forcing the poison quickly into circulation. The wound should not be sucked because the poison may affect the mouth. Some insects are covered with stinging hairs. The larva of the Brown tail moth has barbed hollow hairs containing a fluid which in contact with the skin sets up a rash resembling eczema. The hairs may be blown by the wind to clothing and cause great discomfort. An alkaline lotion containing menthol, zinc oxide, and a disinfectant gives relief.

**Insecticides** are indispensable to all farmers and horticulturists. A specially prepared mixture of flowers of sulphur and quicklime in the proportion of one to four makes a good white wash for fruit trees in the spring and also effectually prevents blight on pear trees. It kills the insect pests by means of the sulphurous fumes which are given off. An application of lime is similarly effective and in no way interferes with the vegetable growth. Many recommend also dry tobacco powder or tobacco soaked in hot water, a soft soap solution with one ounce of soap to the gallon, a substance containing arsenic and known as Paris green, and what is called the Bordeaux mixture which consists largely of copper sulphate. Wasps' nests may be destroyed by pouring a ladleful of tar down the entrance hole and also by a solution of cyanide of potassium (2 oz. to the pint). But extreme caution must be observed with this latter as it is a violent poison. The caterpillars which attack gooseberries and currants are best removed by the tedious process of hand-picking, but they will soon die if subjected to a spraying or syringing with

London purple, which is an arsenite of lime, and therefore, like Paris green, highly poisonous. A thoroughly mixed dressing of lime and soot if liberally applied soon gets rid of the saw fly which eats into pears and cherries. Injections of pure chlorine gas did away with an ant plague at La Rochelle. Fly tapes and fly reels smeared with honey gum or some other sticky substance like treacle and blime rapidly reduce swarms of house flies. In recent years organic compounds, complex derivatives of benzene, have been used as fly with very good results. The best known are D.D.T. and gamma-hexane. Derris powder is also useful in the garden.

**Insectivora** (*Lat.* for insect-eating) order of placental, non-volant mammals. They are small, and derive their name from their common food. All have teeth particularly well adapted for eating insects, with tiny conical tubercles on the top of the molar teeth. Many have a full complement of teeth, incisors, canines, premolars, molars, and even temporary milk teeth. The actual number varies with different families, but forty-two is an average total. I put the caterpillars of the cicadas on the ground when they walk and are therefore said to have plumed feet. There are five toes on each one armed with a claw. They occupy an exceedingly low place in the scale of biological development and are certainly no higher than marsupials. Many zoologists indeed regard them as being more or less representative of the primitive mammalian stock. The skull is of a most backward type, and the brain cavity is relatively small. In habit the Insectivora are generally speaking both terrestrial and nocturnal, a few, however like the *Antrozous*, are aquatic, and others like the tree shrews or tupias of India and the Malay Peninsula, are arboreal. Quite common but as *e.g.*, the huge group of moles and *Talpids* burrow in the ground. Many of them have been discovered especially in the Tertiary strata and more than 200 living species are known. Members of the order multiply with a astonishing rapidity, the hedgehog may have a litter of eight, whilst that of the tenrec sometimes numbers over twenty. Their circulatory system is well developed, their fur is thin and shrews and other species are provided with scent glands at the bases of their bodies. Australia and S. America are the only large areas of the globe where there are no Insectivora, in all other tropical and temperate zones there are many representatives.

**Insectivorous Plants.** One of the most important of the essential elements of plant food is nitrogen. Usually it is obtained from the nitrates of the soil, parasites receive it from the bodies of their host plants. Leguminous plants living in symbiotic relationship with bacteria probably exchange some of their carbon for the nitrogenous compounds of the bacteria. *L.P.*, however, adopt the simple expedient of entangling tiny animals and absorbing their nutritious juices. A well known *L.P.* of S. America is *Thonaria muscipula*, or Venus fly trap. The leaf-blade forms





and have many nerve-endings which make it probable that they serve as organs of touch, by which impressions are conveyed from one I. to another, and perhaps also as organs of smell. Secondly, there are the mandibles or biting and upper jaws, which in insects with the masticatory type of mouth are simply hard plates adapted for crushing and cutting. Below these are the anterior (1st) maxillæ, or lower jaws, which are provided with jointed palps, that is, sense organs, and which often have quite a complex structure. The posterior (2nd) maxillæ are the fourth pair of appendages. These also are complex and furnished with palps, and are, moreover, usually united at their base to form the labia. The mouth is formed of the mandibles and the two pairs of maxillæ, and may be of the sucking or chewing type. Thus moths and butterflies have suctorial mouth arrangements, and whilst their mandibles are only slightly developed, their 1st maxillæ have become proboscises by being protracted into a spiral tube. The mouths of beetles are masticatory. The trunk appendages are the three pairs of legs already referred to. Each limb is divided into five parts, namely hip (coxa), trochanter, thigh (femur), shin (tibia), and foot (tarsus) with claws and pads at the extremity. Sometimes there are tarsal hairs and glands, which enable the I. to grip a smooth surface: the legs of a daddy-long-legs, hunk and long, whilst the water boatman can swim with his, and other insects use theirs for making a noise.

**Skin and glands.**—The chitinous cuticle or integument, which forms a kind of ensheathing skeleton, often bears bristles, tubercles, scales, or hairs the last of which may be tactile or olfactory. Is. are subject to moultings, since the cuticle itself cannot expand to allow for growth, and cast their whole skins many times before reaching their greatest size. The skin serves as a firm support for the highly-developed muscles which work the wings, legs, trunk segments, and organs of the mouth and further control circulation and respiration. Bees, cicadas Is., etc., have wax glands near the bottom of the abdomen or on the back; a number of larvae, especially such as weaver cocoons, have spinning glands opening near the mouth; bugs have odoriferous, and wasps and stinging ants poison, glands, and few Is. are without salivary glands, which also open near the mouth.

**The nervous system** differs, broadly speaking, from that of vertebrates by having a ventral instead of a dorsal nerve cord. The nerve centres, called 'ganglia,' which are usually masses of nervous matter, lie lengthwise along the lower part of the trunk and are connected together by a double chain of nerves. From each ganglion branch nerves are despatched to different parts of the body, and in the extreme front is a larger pair of ganglia, usually called the 'brain'. From the 'brain' the two nerve chains, or cords, divide so as to enclose the gullet, after which they reunite. As regards their sense organs it is certain they have some

of them more highly developed than those of human beings. Is. which visit flowers are wonderfully sensitive to fragrance and to colour, and it is largely by smell, it seems, that I. recognise friends and foes. Some entomologists credit them with a sixth and dermatoptic sense, because their skin seems able to appreciate minute differences of light and shade. Is. hear by means of nerve-endings, called tympanal and chordotonal organs, which lie on various parts of the body surface and greatly surpass human beings in their auditory faculties. Many, like ants and bees, which lead a social life, show signs of extraordinary powers of intelligence and ingenuity in adapting fresh means to compass a particular end. On the other hand, much of what appears to be their most intelligent behaviour is purely instinctive, and when this is interfered with, the insect is unable to adapt itself intelligently to the new situation.

**The circulatory system** centres round the dorsal blood-vessel, or heart, which lies lengthwise along the upper surface of the body, just below the chitinous casing, and which is a tube composed of segments with valves between. Behind, this tube is closed, but in front it is prolonged into a fine channel, the aorta. The blood, which is a colourless, pale green, red, or yellow fluid with amoeboid cells, is pumped out from the heart into the various tissues until a muscular contraction of the body forces the blood back into the heart. Lacunæ, which have no definite walls, take the place of blood-vessels properly so-called. The blood, unlike that of vertebrates, takes no part in the transport of oxygen.

**The respiratory system** of Is. is remarkably efficient. Air-conducting tubes, called tracheæ, are distributed net-wise all over the body, and open to the outer air by means of paired apertures called spiracles, or stigmata. There are usually two pairs in the thorax and ten on the abdomen, but the number varies considerably. The spiracles are often protected by hairs. In water Is. lateral or terminal outgrowths, known as tracheal gills, replace the stigmata; the oxygen dissolved in the water can penetrate through their thin surfaces. The tracheæ are ingrowths from the outer cuticle; they are lined with chitin, and appear silvery and glistening; the air is probably driven through them by muscular contractions, easily seen in the abdomen of a wasp, and continuing even when this part has been cut off from the rest of the body. By the development of spiral bands of strengthening material, the tracheæ are prevented from collapsing, while the diffusion of oxygen through the thin parts of the walls into the surrounding tissues can proceed freely.

**The alimentary system** varies with different species and also to some extent with different diets. The alimentary canal, which passes from front to back usually with sev. loops on the way, may be divided into fore-, mid-, and hind-gut. Mouth, pharynx, and gullet compose the fore-gut; sometimes the gullet is swollen into a kind of crop, the honey-stomach of the bee; sometimes it is prolonged into a

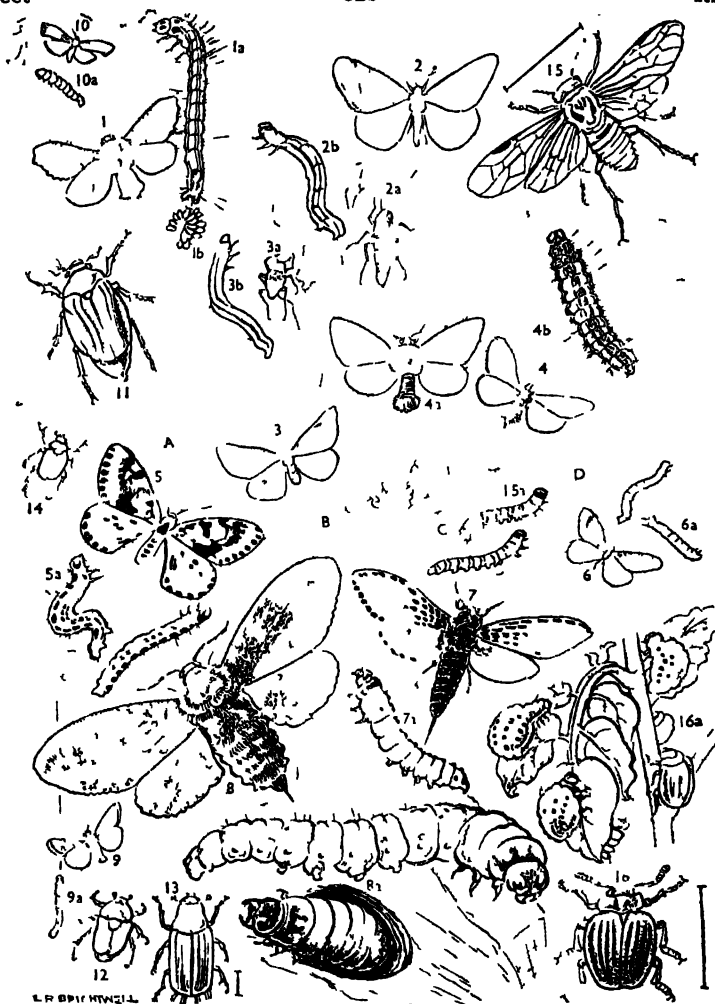
gizzard with grinding plates to promote mastication, and sometimes it has a pouch called the sucking stomach. The fore- and hind-gut are lined with chitin; not so the mid-gut. This is a chyle or digestive and absorptive stomach, and leads into the hind-gut or intestine, which is often coiled and glandular; it is longer in *I.*, which take solid than in those which take liquid food. The intestine absorbs digested food and the soluble waste products leave the body by means of a set of winding threads or tubes, the Malpighian tubules, which usually grow from its upper part. Solid waste products are excreted through the anus.

The reproductive system is represented by paired reproductive organs, the products passing out through paired ducts, the *vasa deferentia* of the male and the oviducts of the female. The sexes are quite distinct and differ in other points of structure as well as in reproductive organs. Thus the female of the butterfly *Orygia* has no wings, and among *Strepsiptera* (bee-parasites) the female never leaves the grub stage. Males can store up spermatozoa in pockets, and similarly certain females, like the queen bee, can preserve for years the spermatozoa received from the male, so that she can continue to lay fertile eggs long after her last sexual union. She does this by means of an internal seminal storage vesicle, the spermatheca. Some females have a well-developed ovipositor at the end of the abdomen. Sexual selection is practised among *I.s.*, a fact which has probably contributed towards more speedy evolution of strength and beauty. Sometimes the males fight for some feminine prize, whilst among bees and other *I.s.* the wooing is quite an elaborate process, the female in this case choosing her mate. Some *I.s.* are exceptionally fertile, as for instance the silkworm and queen bee; others, among them certain Aphides, are remarkable for parthenogenesis, or virgin birth, i.e. development of eggs without fertilisation, which sometimes occurs for a limited period only, and is afterwards followed by normal sexual reproduction. A hive of bees usually has only one perfectly mature female, the queen bee; the mass of females who carry on the work have an immature sexual development, and are therefore called 'neuters,' or 'workers.'

Metamorphosis is a phenomenon common to the majority of *I.s.* However, among Collembola and Thysanura the young, which, as in most *I.s.*, are hatched from the eggs of the mature female, differ from the adults only in point of size, and even among lice, locusts, cockroaches, and many bugs, the only distinction between the infant and parent is the immaturity of the reproductive organs and smaller wings in the infant. These species are therefore said to be 'ametabolic,' that is, not subject to change. Cicadae, Ephemeræ, and dragon-flies, on the other hand, are classed as 'hemimetabolic,' being subject to partial change. Thus a larva of the cicada lives on the ground and has anterior limbs suited to burrowing, whilst fully grown cicadas live among grass. The

dragon-fly is winged and aerial, and breathes with open air-tubes, but its larva lives in the water, and has tracheal gills for respiration. But a large number of species, including house-flies, beetles, and butterflies, are 'holo-metabolic' or subject to complete transformation. The eggs are deposited in such large numbers that they have individually only a very limited food-storage capacity. The result is that each larva is obliged to assume a shape which will allow of its better growth and development, and the form assumed varies a great deal among the different species. The larva of a fly is a maggot which has no distinct head; that of a bee is a grub, whose head is clearly marked; and the caterpillar is the larval butterfly. The normal growth of a larva of this class is as follows: At first, after it has emerged from its shell, it is very active and greedy for food. The body is segmented and supplied with all the organs except the sexual; there are no wings nor compound eyes. In every larva, moreover, what is known as the 'fat body,' that is, a mass of fatty tissues in the trunk-cavity, is peculiarly well-developed. Here, after a busy life of moulting and growing, it accumulates stores of reserve food for use during the coming metamorphosis. Larvae for the most part crawl about, and to aid them in movement they may have from two to five pairs of 'pro-legs,' that is, foot-like processes, on the abdomen as well as true legs on the thorax. The period of change is called the pupal or chrysalis stage. Some larvae, such as those of the silkworm, spin cocoons of silk to serve as a shelter during the metamorphosis. The larva now becomes a 'pupa,' which is quiescent and cannot absorb food, but sometimes, as with dragon-flies and grasshoppers, the larva is transformed into a 'nymph,' which eats and continues active. Wing, grow, and, what is still more marvellous, there is gradually taking place a complete reconstruction of the internal structure of the former larva. Amoeboid cells are fashioned out of the larval organs, and upon the ruin of the latter there grow new structures better adapted for the changed life that is to come. Finally, the pupal husk is broken, and there emerges the 'imago' or perfect *I.* The task of reproduction naturally rests with the fully grown *I.*, which sometimes dies after it is completed. The sexual organs of larva and pupa are usually imperfect.

The classification of *I.s.* is based upon variation in structure, especially upon the various types of wings and mouth arrangements. Some of the most distinctive orders are: (1) The Collembola and Thysanura, together forming the group Apterygota, the wingless insects with incomplete metamorphosis. These orders include the 'springtails,' certain plant lice, the 'bristletails,' and the 'silver-fish.' (2) 'Neuroptera' (nerve-winged): May-flies, caddis-flies, scorpion-flies, and dragon-flies, white ants, and book-lice all now usually regarded as forming separate orders. These have four glassy and membranous wings, an incomplete metamorphosis, and a mouth of the biting type.



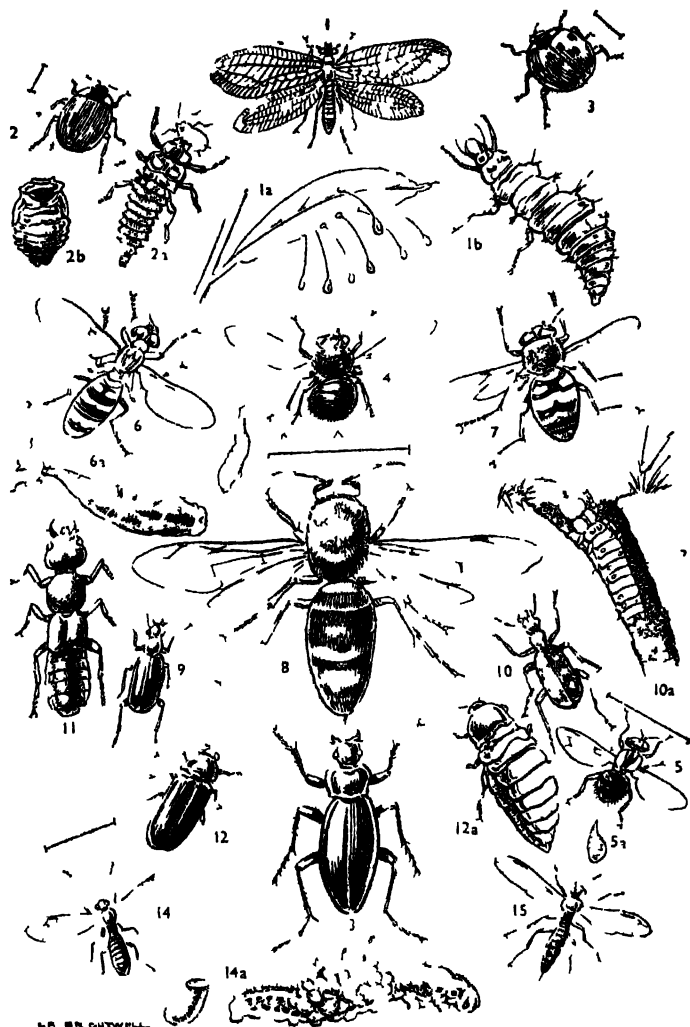
## INSECTS INJURIOUS TO TREES AND SHRUBS

- 1 Jacky Moth (*Malacosoma neustria*) 11 Larva 12 Eggs, in 1 and stem 2  
 Mottled Umber Moth (*Hibermis tiliaria*) 12 Larva 3 March  
 Moth (*Asiopteryx asulata*) 13 Larva 4 Bl w Tul Moth (*Viburnum*  
*phacrinosa*) 14 Larva 5 Maple Moth (*Abnaya rossularata*) 51  
 Larva 6 Winter Moth (*Chimantolia brucei*) 6 Larva 7 W d Leopard Moth  
*(Luzena pyrausta)* 7a Larva 8 Goat Mct (*Callus hirsipertis*) 81 Larve in Willow  
 9 Green Oak Moth (*Tortrix viridana*) 9 Larva, descending fr rolled leaf 10  
 Codlin Moth (*Carpocapsa pomonella*) 10 Larva on Apple 11 Cockchafer Beetle  
*(Melolontha vulgaris)* 12 Row Chater Beetle (*Ceonia aurata*) 13 Pin Beetle (*Hylisus*  
*pumilio*)—enlarged 14 Garden Chater Beetle (*Phyllotreta horticola*) 15  
 Gooseberry Saw fly (*Nematus ribesii*) 151 Larve 16 Colorado B tile (*Leptinotarsa*  
*decimneata*) 16a Larve A Blackthorn B Oak C Gooseberry D Hawthorn  
 The drawings are life size, except of very small insects (actual sizes indicated by a line)

Most of these insects feed on others which are pests. (3) *Lepidoptera* (scale winged) butterflies and moths. These have four wings with delicate coloured scales. Metamorphosis is complete. The mouth is furnished with a proboscis, and the larva are characteristic. The pupa of most *Lepidoptera* is described as a chrysalis. (4) *Orthoptera* (straight winged) earwig, cockroach, locust, grasshopper, and cricket. These are ametabola have cerci appended to the abdomen, and have the front pair of wings leathery and smaller than the back wings which they protect. Sometimes both pairs of wings are absent to greatly reduced, and the hind wings may be modified particularly in the male and used for producing sounds e.g. the chirp of the cricket. Many *Orthoptera* seldom or never fly but such forms usually have extremely well developed legs and can like the grasshoppers run or jump very rapidly. On the other hand the locusts have very powerful wings, and are capable of prolonged flight. (5) *Hymenoptera* (membran winged) wasps, bees, ants, ichneumonids and gall flies (*gall*). Their mouths are both biting and suctional. They have four transparent membranous wings and undergo a remarkable transformation. An ovipositor retractile in some species is developed in the female and may be modified into a sting. Euthenogenesis occurs very commonly and sometimes there is a regular alternation of euthenogenesis and sexual generation. Euthenogenesis (ages of bees develop into males (drones) those of saw flies into males or females but those of some insects into females only. (6) *Diptera* or the (two winged) house fly, house fly and blow fly. They have diddly long legs and in some the mouth metamorphosis is very complete. Their mouths are mostly used and their two wings are transparent and membranous and their larvae are footless and headless (maggots). The hind wings are represented by a pair of small outgrowths the halteres which act as balancers. The mouth parts show great variety of structure, and frequently consist both piercing and suctional organs. The gnat and mosquito have a mandible and first maxilla modified to form piercing stylets, the labrum and a section of the pharynx are fused to form a deeply grooved structure which functions as a channel conveying the liquid food to the pharynx. All these parts are guided by the fork tip of the labium. The suctional mouth parts of such insects as flies are aided by a very muscular pharynx which acts as a suction pump. (7) *Hemiptera* (half winged) aphids (green fly), cochineal insect, water boatman like, bugs, and cicada. These undergo slight metamorphosis have suctional mouth parts and four wings which are either membranous or horny with a membranous vein. The *Hemiptera* do considerable damage to plants and animals and are consequently of great economic importance. (8) *Coleoptera* (sheath winged) water beetle, stag beetle, and tiger beetle, etc., glow worm, ladybirds,

and cockchafer. Members of this class experience a complete transformation and have biting mouths, but their salient characteristic is the horny sheath (elytra) of which their front or upper wings are composed so that the delicate membrane of the hind or lower pair is quite hidden from view, these elytra meet in a straight line when folded. Most *Coleoptera* fly very little and the wings are very reduced in many species. Sounds may be produced in various ways. By friction between the abdomen and elytra of weevils by the tapping movement of the 'death watch', *Anobium* and by friction between the scutellum and outgrowth of the second thoracic segment and the body of the longhorned beetles.

*Life and General Characteristics*—Insects have most diverse habits and frequent and ground caves, hot springs, and even the air nevertheless, the majority are aerial and dwellers on land. In tropical and temperate climates they abound but they are represented even in the polar regions. Many as for instance the pond skater, whirligig beetle, water scorpion and gnat are aquatic at least for the earlier days of their life. Generally speaking, adults are short lived and die within a few weeks with the adult *Phlebotomus* (*Mexico*) is an exception does not live less than twenty four hours but the queen bee lives for some years and a queen ant will occasionally last for this time. The food of insects is very various. Some like the pollen and nectar from the flower others feed on weaker species of their kind and others are parasitoid or predators of higher animals. Others again grow fat on putrescent matter and yet another section sucks juices secreted by living organisms. Parents will often gather a store to feed their young even though they themselves die before the larvae are hatched. A number of insects are able to express their anger or fear or to convey information or make love by means of sound. This may be produced by the rubbing together of the rough surfaces of the outer cuticle or by the buzzing vibration of the leaf like appendages near the stimuli of the antebes or by the quick flutter of their wings. Thus grasshoppers strike their legs against their wing ribs to make crickets chirp by rubbing their wing cases together. Many *Hymenoptera* produce their noise by the second maxilla whilst the whirling sound of bees and flies is due to wing motion. The diddly head moth emits a noise by blowing air out of its mouth. Sometimes the noise is purely automatic. If left undisturbed it would multiply with an alarming rapidity. Fortunately however, the difficulty of obtaining food, lack of water and the predation which birds, ants, cats, frogs, and fishes show for them as food counteract their amazing fecundity. As with higher animals so certain insects are naturally protected by having an outward appearance which exactly counteracts their actual surroundings. This is the case with moss and leaf beetles and humming bird moths. Other insects are saved from molestation by disgusting fluid dis-



W. B. DENTWELL

## USEFUL INSECTS

1. Lacewing Fly—*Chrysopa* (*Nothochrysa*) 1a. Larva 2. Two spot Ladybird Beetle—*Coccinella septempunctata* 3. Seven spot Ladybird Beetle—*Coccinella septempunctata* 4. Spiny Fly—*Leucophaea* (*Leucophaea*) 5. Spiny Fly—*Leucophaea* (*Leucophaea*) 6. Spiny Fly—*Leucophaea* (*Leucophaea*) 7. Spiny Fly—*Leucophaea* (*Leucophaea*) 8. Spiny Fly—*Leucophaea* (*Leucophaea*) 9. Sun beetle—*Helostichus vulgaris* 10a. Larva in burrow 11. Diving beetle—*Hydroporus* (*Hydroporus*) 12. Diving beetle—*Hydroporus* (*Hydroporus*) 13. Diving beetle—*Hydroporus* (*Hydroporus*) 14. Bracon Fly—*Mesochorus glomeratus* 15. Ichneumon Fly—*Pimpla instigator* 16. Ichneumon Fly—*Pimpla instigator* 17. Ichneumon Fly—*Pimpla instigator* 18. Ichneumon Fly—*Pimpla instigator* 19. Ichneumon Fly—*Pimpla instigator* 20. Ichneumon Fly—*Pimpla instigator* 21. Ichneumon Fly—*Pimpla instigator* 22. Ichneumon Fly—*Pimpla instigator* 23. Ichneumon Fly—*Pimpla instigator* 24. Ichneumon Fly—*Pimpla instigator* 25. Ichneumon Fly—*Pimpla instigator* 26. Ichneumon Fly—*Pimpla instigator* 27. Ichneumon Fly—*Pimpla instigator* 28. Ichneumon Fly—*Pimpla instigator* 29. Ichneumon Fly—*Pimpla instigator* 30. Ichneumon Fly—*Pimpla instigator* 31. Ichneumon Fly—*Pimpla instigator* 32. Ichneumon Fly—*Pimpla instigator* 33. Ichneumon Fly—*Pimpla instigator* 34. Ichneumon Fly—*Pimpla instigator* 35. Ichneumon Fly—*Pimpla instigator* 36. Ichneumon Fly—*Pimpla instigator* 37. Ichneumon Fly—*Pimpla instigator* 38. Ichneumon Fly—*Pimpla instigator* 39. Ichneumon Fly—*Pimpla instigator* 40. Ichneumon Fly—*Pimpla instigator* 41. Ichneumon Fly—*Pimpla instigator* 42. Ichneumon Fly—*Pimpla instigator* 43. Ichneumon Fly—*Pimpla instigator* 44. Ichneumon Fly—*Pimpla instigator* 45. Ichneumon Fly—*Pimpla instigator* 46. Ichneumon Fly—*Pimpla instigator* 47. Ichneumon Fly—*Pimpla instigator* 48. Ichneumon Fly—*Pimpla instigator* 49. Ichneumon Fly—*Pimpla instigator* 50. Ichneumon Fly—*Pimpla instigator* 51. Ichneumon Fly—*Pimpla instigator* 52. Ichneumon Fly—*Pimpla instigator* 53. Ichneumon Fly—*Pimpla instigator* 54. Ichneumon Fly—*Pimpla instigator* 55. Ichneumon Fly—*Pimpla instigator* 56. Ichneumon Fly—*Pimpla instigator* 57. Ichneumon Fly—*Pimpla instigator* 58. Ichneumon Fly—*Pimpla instigator* 59. Ichneumon Fly—*Pimpla instigator* 60. Ichneumon Fly—*Pimpla instigator* 61. Ichneumon Fly—*Pimpla instigator* 62. Ichneumon Fly—*Pimpla instigator* 63. Ichneumon Fly—*Pimpla instigator* 64. Ichneumon Fly—*Pimpla instigator* 65. Ichneumon Fly—*Pimpla instigator* 66. Ichneumon Fly—*Pimpla instigator* 67. Ichneumon Fly—*Pimpla instigator* 68. Ichneumon Fly—*Pimpla instigator* 69. Ichneumon Fly—*Pimpla instigator* 70. Ichneumon Fly—*Pimpla instigator* 71. Ichneumon Fly—*Pimpla instigator* 72. Ichneumon Fly—*Pimpla instigator* 73. Ichneumon Fly—*Pimpla instigator* 74. Ichneumon Fly—*Pimpla instigator* 75. Ichneumon Fly—*Pimpla instigator* 76. Ichneumon Fly—*Pimpla instigator* 77. Ichneumon Fly—*Pimpla instigator* 78. Ichneumon Fly—*Pimpla instigator* 79. Ichneumon Fly—*Pimpla instigator* 80. Ichneumon Fly—*Pimpla instigator* 81. Ichneumon Fly—*Pimpla instigator* 82. Ichneumon Fly—*Pimpla instigator* 83. Ichneumon Fly—*Pimpla instigator* 84. Ichneumon Fly—*Pimpla instigator* 85. Ichneumon Fly—*Pimpla instigator* 86. Ichneumon Fly—*Pimpla instigator* 87. Ichneumon Fly—*Pimpla instigator* 88. Ichneumon Fly—*Pimpla instigator* 89. Ichneumon Fly—*Pimpla instigator* 90. Ichneumon Fly—*Pimpla instigator* 91. Ichneumon Fly—*Pimpla instigator* 92. Ichneumon Fly—*Pimpla instigator* 93. Ichneumon Fly—*Pimpla instigator* 94. Ichneumon Fly—*Pimpla instigator* 95. Ichneumon Fly—*Pimpla instigator* 96. Ichneumon Fly—*Pimpla instigator* 97. Ichneumon Fly—*Pimpla instigator* 98. Ichneumon Fly—*Pimpla instigator* 99. Ichneumon Fly—*Pimpla instigator* 100. Ichneumon Fly—*Pimpla instigator*

charges, an unpleasant smell, a hard skin, or an offensive weapon like a sting. The social species, ants, bees, termites and wasps, offer a most instructive and fascinating field for study by reason of their 'intelligence', architectural skill, and developed communistic life.

**Economic value.**—Unconsciously, *Is.* play a great part in the cross-fertilisation of flowers as they carry pollen from one bloom to another. The 'myrmecophilous' (ant-loving) plants are actually guarded by ants from other and hostile intruders. Man owes a debt of gratitude to the hive bee for its honey and wax, to the silk moth for its silk and to the cochineal *I.* for a dye. But there are many species which seem purely harmful and destructive. Cattle, sheep and horses are unweaned and attacked by the bot fly, crops, orchards and vines are prey to a whole army of greedy parasitic *Is.* and the havoc caused by a locust swarm is often immense. House flies and fleas have been proved to be the agents which carry pathological or disease-bearing germs in a number of infectious outbreaks—the mosquito is responsible for malarial yellow fever and the horrible disease called *Elephantiasis ardens* and the bit of the tsetse fly is often fatal to human beings. In the fly *Is.* is very bubonic plague. It unweans prey to enlarge on the local mutations produced by lice fly and so on. **Scats.** Excretionary and under in hybrid insects.

**See L.** (C. Muir) *Natural History of Aquatic Insects* 1881. G. H. Carpenter *The Biology of Insects* 1928. W. M. Wheeler, *The Social Insects* 1928. B. A. Wade, *The Problems of Applied Entomology* 1929. Sir J. Lubbock *Ants, Bees and Wasps* 1925. C. I. Williams, *The Migration of Butterflies* 1930. A. D. James, *A General Textbook of Entomology* 1930. *Recent Advances in Entomology* 1931. *Social Behaviour in Insects* 1931 and *Insect Natural History* 1937. C. Weid, *Insects, Wasps* 1930. W. M. Wheeler, *Demons of the Dust, a Study in Insect Behaviour* 1931. C. I. M. Teal and W. P. Hunt, *Fundamentals of Insect Life*, 1932. E. Steyer, *Bees, Wasps, Ants, and Other Insects of the East Indies* 1932. J. Henri Fabre, *Scenes de la Vie des Insectes* 1933 and *Social Life in the Insect World*, 1937. A. B. Wigglesworth *Insect Physiology* 1934. R. E. Snodgrass *Principles of Insect Morphology*, 1935. Sir J. Thomson *The Ways of Insects*, 1935. (C. D. Duncan and G. Pickwell) *World of Insects* 1939. J. W. Hulse, *Near Horrors* 1917. G. H. Stovin (ed.) and W. Stokes (compiled), *The Caterpillars of British Moths* 1919.

**Insemination, Artificial** fertilisation of an egg by spermatozoa (sperm) reaching it through some artificial agency, i.e. not by normal transference of the sperm from the male animal during mating of male and female individuals. In laboratory experiment *A. I.* is frequently practised on such animals as the sea urchin and it is also carried out on a commercial scale in trout farming. Its most usual application is in mammals, where the earliest recorded experiments are those of Spallanzani (1780), who succeeded in fertilising dogs

by sperm introduced artificially into the vagina. *A. I.* is now employed in the rearing of farm animals, especially cattle (critics have been established at various places in Great Britain where semen collected from high grade bulls, is stored in vacuum ('thermos') flasks and dispatched through the post to small farmers who are spared the expense and trouble of maintaining male animals for service. *A. I.* sometimes establishes pregnancy in humans, when normal coitus fails through some defect in the reproductive organs. There can be no objection to its employment when the sperm is provided by the husband (*A. I. H.*) but *A. I.* by some outside donor (*A. I. D.*) is condemned as adultery by the Church, besides raising such problems as who is the legal father of the child, or indeed whether the child is legitimate. Nevertheless *A. I. D.* is carried out regularly in at least one London clinic. See Barton Walker and Walsner *British Medical Journal* p. 10 Jan. 1, 1941, and J. J. Perry (ed.) *The Artificial Insemination of Farm Animals* 1941.

**In-Shan Mountains**, range in Mongolia, on the N. side of the Hwangho. They rise to an altitude of from 3000 to 8000 ft. and are part of the extensive Khingan mts. from the N. of the Gobi Desert. *A. I.* set in the Mongolian of Manchuria.

**Insolvency, Insolvency.** **Insolvency** denote inability to pay one's debt. The term *solus* is English law is concerned for most practical purposes regulated by the term 'bankruptcy' (see Bankruptcy) and on the old distinctions between *I.* and bankruptcy. In Scots law bankruptcy is hardly a term of art, except in the phrase *a bonis bankruptis*, which implies a condition of *I.* attended with certain statutory effects restricting the insolvent's power of dealing with his property, but it is also commonly used in connection with the public bankruptcy notices of sequestration *ex cesso* under which an insolvent yields (*cessare*) his property up to his creditors. Taken in this latter sense the term does not differ essentially from the state of a debtor who has been adjudicated bankrupt under the law. The importance in Scots law of the condition of *I.* is distinct from bankruptcy which has become public, in that it has certain special effects on the debtor's power of granting alienations. The most important general effect of *I.* is that it is a step in the direction of notional bankruptcy, it being a necessary condition to obtaining a *cessio bonorum*. The special effects of *I.* above alluded to are that the insolvent is restrained from depleting an estate or fund insufficient to meet all claims by voluntary or gratuitous alienations or by alienations made for an inadequate consideration or by fraudulent preferences of one creditor over others. The only courses open to an insolvent failing his inability to regain his solvency are to go through with his public adjudication of bankruptcy or sequestration, or to try to provide some voluntary or extrajudicial arrangement of a more or less private character.

**Insomnia**, see under SLEEP.

**Inspectors, Factory, see FACTORY LEGISLATION.**

**Inspiration** (Lat. *inspiratio*, from *inspire*, to breathe into), term used in theology to denote that Divine influence on the writers of the Bible by means of which their writings became a Divine revelation. All orthodox theologians are agreed in regarding the Holy Scriptures as the revelation of God in some sense, but there is much difference of opinion as to the method and extent of the Divine inspiration. The dogmatic formula of the Church on the subject, to be traced through various councils and writers from a very early date, simply states, *Deus est auctor librorum sacra scriptura*, but this general statement is explained in some detail by the Vatican Council, where it was pronounced that the Scriptural writings are held as sacred and canonical by the Church, 'not because after being composed by merely human industry they were then approved by her authority, not simply because they contain Revelation without any error, but because, being written under the inspiration of the Holy Ghost, they have God for their Author.' The theory of I. generally known as *verbal* or *mechanical* was held for centuries by Protestants. This view does much to remove all variety and individuality from the writers of the sacred books, making them mere instruments upon which the breath of God plays. Their words are to be regarded as the very words of God as certainly as if a voice had announced them from the skies (see HIXALITION). Such a theory of verbal I. throws the whole weight of authority on the autograph MSS., which in no single case are extant, and makes trans., which must ever be more or less inaccurate, somewhat dangerous. The theory of *dynamic* I. in its various forms is that now generally held by Protestants as well as by Rom. Catholics. It is that the writers did *not* lose their own individuality, but were so under the influence of the Spirit of God that they could make no error in transmitting to mankind the truths which they were intended to convey. The theory of dynamic I. finds ample support in the Fathers. 'The Gospel,' says St. Jerome, 'is not in the words, but in the sense—*non in superfetis sed in medulla*.' Similarly, St. Augustine speaks of the writer as 'inspired by God, but yet a man—*inspiratus a Deo sed tamen homo*.' This theory is closely related to that of *essential* I. which holds that the I. of Scripture relates only to faith and morals. In support of some form of these theories may be advanced among others the names of St. Thomas Aquinas, Erasmus, Grotius, Baxter, Paley, and Dollinger. See B. F. Westcott, *General Survey of the History of the Canon of the New Testament*, 1896; W. Sanday, *Inspiration*, 1896; A. B. Davidson, 'Prophecy,' and A. E. Garvie, 'Revelation,' in J. Hastings's *Dictionary of the Bible*, 1898; D. Davidson, *Hidden Truth*, 1934; R. H. Malden, *The Inspiration of the Bible*, 1935.

**Insterburg**, tn. of the R.S.F.S.R. formerly of E. Prussia, on the R. Pregel, 57 m.

E. of Königsberg. It is noted for iron foundries, tanneries, breweries, machines, tiles, leather, hides, and linen. In the great Russian general offensive of 1945 against Germany I. fell to Cherniakovsky, advancing from the E. almost simultaneously with the capture of Allenstein by Rokossovsky (Jan. 22, 1945). Pop. 41,200.

**Instinct**. Everyone may be said to understand in a general way what is meant by I., despite the difficulty of formulating any satisfactory definition. Darwin himself, in his examination of the various distinct mental actions commonly embraced by the term, refrained from any attempt at definition. It may, however, be tentatively defined or rather described as those congenital or natural attributes of the mind which, though closely assimilated to, are distinct from, habit and which impel an animal under given circumstances to act in a certain way without experience, and frequently without a knowledge of the object with which the action is done. All the great scientific psychologists have rather naturally been greatly concerned with the origin of I. and the problems surrounding it, but no satisfactory conclusion has been reached (See also BEHAVIOURISM; EVOLUTION; HABIT). For the mass of evidence accumulated on the character or manifestations of I. see C. Darwin, *Origin of Species*, 1859, and *Descent of Man*, 1871; G. I. Romanes, *Mental Evolution in Animals*, 1883; C. Lloyd Morgan, *Habit and Instinct*, 1896; A. Weismann, *Essays upon Heredity and Kindred Subjects*, 1889; S. Alexander, *Art and Instinct*, 1927; D. Katz, *Animals and Man*, 1937; and the works of E. Haeckel.

**Institute**, in Scots law, the person in a deed of settlement or other instrument by which lands are granted (see GRANT) who takes the first or earliest estate (*q.v.*) or interest is called the I. Those who follow the I. are called the heirs or substitutes. If the I. dies before the disposer or grantor, the first substitute or heir takes without a service process or 'hancery upon a breve for completing the title of an heir'. Conditions annexed to the grant will only affect the substitutes, unless the grantor has made it clear that the I. is also to be bound. See BELLS' *Dictionary*; FRANKS' *Principles of Scots Law*.

**Institute of France**, estab. in 1795, was formed by the Directory to take the place of the four suppressed learned societies of that country: the Fr. Academy of Inscriptions and Belles Lettres, the Academy of Sciences, and the Academy of Fine Arts. The Academy of Moral and Political Sciences was added in 1832. Each academy has a separate organisation but participates in the advantages of the common library, archives and funds. Election to membership is by ballot and subject to confirmation by gov. Every member receives a salary. Membership of the Academy Française is limited to Frenchmen—popularly known as the 'Immortals.' See G. de Francqueville, *Le premier siècle de l'Institut de France*, 1895.

**Institute of International Affairs**, Royal, see ROYAL.

**Institute of Recorded Sound**, see SOUND.  
**Institute of Sanitary Engineers**, see SANITARY ENGINEERS.

**Institutes**, term borrowed from the civilians (civil law) to denote text-books containing the fundamental principles of a legal system. The I. ascribed to Gaius were discovered accidentally by Niebuhr at Verona, and on translation at once became a leading feature of the study of Roman law. Gaius' I. were found to be the basis of Justinian's I., which, with modifications to suit subsequent changes in the Roman law, are a mere imitation of the earlier I. Justinian's I. were expressly put to promote the study of legal principles. The four vols. of *Commentaries upon the Common Law*, written by Coke, were by him called I., such a term might also be applied to the commentaries of Blackstone and Stephen, and with greater appropriateness, for there is next to no scientific arrangement or comprehensive exposition of principles in Coke's work. John Erskine of Cunnock, prior of law, wrote *Institutes of the Law of Scotland* during the first part of the eighteenth century, and this book was for long the leading text book on Scots legal principles, and is even now often cited.

**Institution**, one of the necessary steps in the appointment of a parson or vicar. I., which comes after the taking of holy orders and admission by the bishop of the patron's presentation is a kind of investiture of the spiritual part of the benefice. Its purpose is the entrusting to the charge of the incumbent (q.v.) the care of the souls of the parish. It fills the vacant benefice with the result that no fresh presentation can be made until another vacancy (unless the king be the patron) and the incumbent may then enter on the parsonage house and globe, and take the tithes. But he cannot grant or let the tithes until induction, the last step in the process of becoming a parson or vicar. See Phillimore's *Ecclesiastical Law*, 1891.

**Institut Français**, educational centre in London, its object being to promote a knowledge of France among Eng. people—just as the purpose of the Brit. Council is to promote a knowledge of Brit. culture among foreigners. Its offices are in Cromwell Gardens, London, S.W.

**Institut Pasteur**, see under PASTEUR.

**Instrument of Government**, document which prescribed the powers of Oliver Cromwell when he accepted the office of Protector of the Commonwealth of England (Dec. 16, 1653). It provided for triennial parliaments, to be in session for not less than five months, with 100 members for England and thirty each for Scotland and Ireland; an army of 30,000 men; freedom of religion for all except Papists and Prelatists; and for an elective Protector. The first Parliament under the I. of G. sat for only five months, it not being altogether favourable to Cromwell's authority, and the Protector then followed Charles I.'s example and for some time ruled without a Parliament.

**Instrumentation**, see ONCHETRA.

**Instruments, Electrical**, indicating and

measuring, see articles on AMMETER, ELECTRICITY—Electrostatics, GALVANOMETER, VOLTMETER and WATTMETER.

**Insabres**, Gallic tribe who crossed the Alps, and were established in Cisalpine Gaul by the later part of the fifth century B.C. Shortly before the first Punic war the Romans reduced them to submission, but they regained their liberties after Hannibal's triumphant progress through Italy. In 196 B.C. they finally lost their independence.

**Insula**, see LAITI.

**Insulator**, see ELECTRIC CABLES.

**Insulin** is the active substance in the secretion of isolated groups of pancreatic cells forming the 'islands of Langerhans.' In the absence of this secretion, excess of sugar passes into the blood and causes *Diabetes mellitus*. In 1921, Dr. R. L. McKenzie Wallis claimed to have isolated this active substance from the pancreas of freshly killed pigs, and administered it in capsules to diabetic patients. In the same year Dr. I. G. Banting (q.v.) assisted by



Topical Press

Dr. I. G. BANTING

Post, at Toronto, isolated and named the active constituent insulin, and Collip (1922) purified the crude product. For medical purposes I. is now prepared from the pancreas of oxen, and is found to be beneficial only when injected. Excess of I. aggravates diabetes by causing the liver to discharge glycogen. Abel (1925-28) prepared crystalline I. and determined its properties, and more recently Sjögren at Upsala has determined its molecular weight to be approximately 35,000, and the shape of its molecule spherical. From these results, and the determination of other physical constants, he concludes that insulin is a protein belonging to the



same group as egg albumin and Bence Jones protein. In solution this crystalline insulin is stable provided the pH (hydrogen-ion concentration, *q.v.*) ranges from 4.5-7. Beyond this range it dissociates into substances of lower molecular constitution, but near the borders of the range of stability, the reaction is reversible. If the solution be too acid or too alkaline permanent dissociation will occur. I. is now used in courses of hypodermic therapy in the treatment of mental disorders. See also INSANITY.

**Insurance**, contract under which one party undertakes for a consideration to indemnify another against certain forms of loss. In the present day the practice of I. has become so general that practically every contingency which may arise as the result of accident may be covered, but the earliest and most widely practised forms of I. are 'Marine', which applies to ships and property at sea; 'Fire', which is the I. against fire of property on land; and 'Life'. This last differs from other Is. in that, although a contract to indemnify against loss by premature death, at the same time it provides a certain benefit. For this reason *Life* business is sometimes referred to as 'assurance', as distinct from 'insurance', but there is no rule for this, and the terms 'insurance' and 'assurance' are synonymous in the profession.

The first I. business to be practised was *Marine*, and it is probable that for commercial purposes it originated in Flanders, being introduced into England early in the sixteenth century. *Marine* business differs in one notable respect from other Is., in that, although it is done by a number of independent, self-contained companies, a large share is transacted by individuals known as underwriters. These underwriters are members of a society called Lloyd's, the name originating from a certain coffee house in Abchurch Lane, where the original members met. Their affairs are arranged by a committee, and the subscribers include the companies who also transact the business. The society has agents throughout the world who keep in touch with the shipping at all the principal ports, and render an account of the same, together with particulars of any casualties which may have happened. An I. is divided amongst a group of underwriters, each holding a small proportion of the total amount at risk. Policies are issued to cover vessels, their freight and cargo, against all maritime risks, which include risks of navigation, fire and seizure, during a certain period, not exceeding one year, or for a specified voyage. The I. covers the ship or cargo, and includes the cost of the I. upon the whole. Policies may be 'time' policies or 'voyage' policies, as specified above, and are either valued, in which case the sum insured is based upon a specific bill of lading, or open, when the value of the vessel is estimated as at the date of sailing, plus the amount she would have earned on the completion of the voyage and the cargo at its invoice price. The settlement of marine losses is of particular interest, as the question of salvage following a loss sometimes presents considerable

difficulty. It may happen that a vessel carrying a valuable cargo is sunk where it is possible to salvage a portion of the goods insured, and in such a case there are varying methods of effecting a settlement of the claim, and sev. courses open to adoption by the underwriters. For instance, they may pay the total loss and recover what they can of the salvage, themselves arranging with a firm to conduct the operations, or they may pay the insured's actual loss, after deducting the value of the goods salvaged, plus the expenses of the operations. The destructible nature of the goods insured is, of course, the principal factor, and the cost of the I. is largely affected by this. Demurrage charges and the principles governing them were revised in 1924 at a congress at Stockholm where a set of regulations arising out of the International General Average Rules of 1890 were redrafted and adopted internationally. In 1924 the Carriage of Goods by Sea Act was passed, which adjusted many anomalies arising out of the legal questions involved in contracts of affreightment between shipowners and shippers.

**Fire Insurance.**—A contract of indemnity in respect of loss or damage to material property by fire. The policy-holder (called the insured) pays a certain agreed amount (the premium) to the insurer, and is reimbursed his loss out of the fund accumulated by the insurer. Premiums are generally payable annually, and as a rule fifteen days of grace are allowed for payment of the amount due. Fire I. was first introduced into this country more than 200 years ago, but there is evidence of a type of fire I. at a much earlier date by means of levies on guilds, wards, etc. In the early days companies were formed for the sole purpose of transacting fire I. but at the present time most classes of I. are transacted by each. There are more than 100 Brit. companies underwriting fire I. in the United Kingdom, and most of them have extended their activities overseas, where they have an excellent reputation. It is estimated that over 75 per cent of the premiums paid to Brit. companies come from overseas, and of this amount more than half is from the U.S.A. The ordinary form of policy issued in respect of trade property covers damage by fire, lightning, explosion of coal gas (except on premises where gas is manufactured or stored), and domestic boilers. The private-house fire policy usually includes thunderbolt, subterranean fire, earthquake fires (not earthquake shock), and fires caused by rioters and strikers.

Practically any property that is capable of being damaged by fire can be insured, the premium charged being based on the hazard of the risk. For example, private houses, blocks of offices, and property of a like nature, where the risk of serious fire is slight, are termed non-hazardous, and rated accordingly, usually at about 18.6d. per cent. On the other hand, factories where inflammable goods are manufactured, buildings of flimsy construction, or situated in a neighbourhood presenting more than usual fire risk, are deemed

hazardous, and rated according to their merits. Companies tend now to calculate the premium for any one class of trade so that over a period of years the income is sufficient to meet the losses and expenses and show a small percentage of profit. The profits of a fire company are usually about 5 per cent of the premium income.

To obtain data on which to calculate premiums, officers depend on their loss experience in past years. Because the scope of each office's experience is not sufficiently general for accurate results to be obtained, a number of companies now combine

branch of work, not does it know of the time and money spent by the companies in testing and approving fire extinguishing appliances, fire ladders, and building materials. Officers have surveyors and experts who may be consulted on such matters. But fire brigades are now maintained by cops and cobbers, in the past the duty was undertaken by the fire companies. Each office had its own firemen and appliances, and fixed a special place of fire truck on every house it insured. It being the duty of a company's men only to extinguish fires in buildings insured by their employer, the brigade



THE SUN INSURANCE COMPANY FIRE BRIGADE IN 1820  
Illustration reproduced from the Sun Insurance Co. Magazine

their analysed record of different types of factories and shops, and charge similar rates based on the results of their joint experience. The association formed by them is known as the Fire Offices Committee, and because of the efforts of this committee premiums have been adjusted so that as far as possible each individual pays his equitable proportion to the fund. The members of this committee are called tariff companies, whilst those that remain distinct are known as non-tariff companies, and charge whatever premiums they think adequate based on their own underwriting experience. In this latter group are included underwriters at Lloyd's. By penalising bad features and allowing substantial reductions in premium for good, fire offices have effected tremendous improvement in methods of construction, lighting, heating, etc.

Many valuable lives are also saved every year through these improvements. The public is not generally aware of this

and it remains a sight-seeing if the building that was destroyed did not belong to their company's work. (See FIRE BRIGADES AND FIRE INSURANCE.) Fire offices in London, Liverpool and Glasgow still maintain at their own expense salvage corps. Fire companies must in accordance with the Assurance Companies Act 1909 make a deposit of £20,000 in cash or approved securities with the Board of Trade before they can accept business in this country, unless they have already made a deposit in respect of some other class of business included in the Act. Their annual accounts have to be lodged with the Board every year, and severe penalties are incurred if they fail to comply with the Act.

Comprehensive or all-in policies in respect of private dwellings have in the past been brought out and combine many forms of insurance in one document. The furniture and household effects are insured against fire, lightning, aircraft, burglary, storm, flood, and many other perils, and

domestic servants *I.* is also included. The rate of premium is usually 3s. per cent. Comprehensive building policies include certain of these risks at a lower rate.

Another form of fire *I.* protection now being placed before traders and manufacturers is loss of profits or consequential loss *I.* The ordinary fire policy indemnifies the trader in respect of the material damage to his property, but this does not represent the full amount of his loss by a fire. The loss of profits policy is designed to meet this need, and reimburses him for his lost profits and increased expenditure for a certain stated period (called the period of indemnity) from the date of the loss. The period of indemnity is arranged by the trader when effecting the policy, and represents his estimate of the time necessary to set the business on its feet after a fire. The usual period is from three to twelve months, although *I.* is often arranged for trades which do not overcome the effect of a fire for considerably longer periods. The amount payable by the insurers is normally adjusted on the basis of the decrease in turnover during the period of indemnity, as compared with the similar period in the preceding year. The amount recoverable is a proportion of this decrease, and is usually the ratio of profit and standing charges to turnover as shown in the accounts for the last financial year. Expenditure on increase in cost of working is also recoverable. The *I.* is adjustable to suit all types of businesses. The rates are based on the fire premiums paid for the contents of the premises. Percentages of fire loss, a form of loss of profits *I.*, is suited only to the requirements of one or two trades. The policy pays a fixed proportion of the amount recoverable under the ordinary fire policy. In most cases the amount of material damage is no index of the resultant loss of profits, as a comparatively small fire may entirely stop the business until the damage is made good.

Sprinkler leakage *I.* is now offered, as many factories, shops, and public buildings are fitted with automatic sprinkler installations for extinguishing fires. The premiums usually depend on the class of goods and the number of sprinkler heads.

Average clauses, which make the policyholder bear a proportion of the loss should the property be under-insured at the time of the fire, are seldom met with in policies for private dwellings or small trade risks. It may be unwise to under-insure, for the total liability of the company is limited to the sum insured, and the policyholder cannot recover any amount in excess of that figure. The policy is a contract of indemnity, and the amount recoverable is the actual value of the articles destroyed at the time of the fire, *i.e.* the *mrkt.* value of similar articles less a reasonable amount for depreciation and wear and tear. The sentimental value of an article cannot be covered. Valuable pictures, books, and works of art are usually insured for an agreed amount, because of the difficulty of ascertaining their *mrkt.* value. *I.* based on inventories made by licensed

valuers are satisfactory to both insurer and insured, provided that frequent revaluations are carried out to meet changes in *mrkt.* value.

Policyholders should note that their fire *I.* company must be advised of any change in circumstances which may affect the *I.* Notices should be given if the policy is to apply to a new address or the benefit is to be vested in another person; if any part of the premises becomes occupied for a purpose different from that in force when the policy was effected; if any additional or alternative method of lighting, heating, or ventilating the building is contemplated; or when any structural alterations are to be made. The *I.* company expect and require their policyholders always to act in good faith with them.

*Life I.* originally provided, as in the case of other forms of *I.*, against a contingency, but it has long since been extended to include a payment on a certain happening, such as death. The earliest *life I.* on record is dated 1585, when it is probable that *Is.* were granted to cover only short periods as a protection to creditors. The extension of the business was very gradual at first, but for the last century there has been such rapid growth that in 1870 the Life Assurance Companies Act was passed for the protection of policyholders. In 1909 the business was further regulated by another Act. This provides that a company transacting *life I.* must deposit £20,000 with the Board of Trade, and must pub. ann. balance sheets and revenue accounts. It is also laid down that there shall be periodic valuations, not less frequently than quinquennially, of the assets and liabilities of each company. The 1909 Act further governs the procedure to be adopted when amalgamation of companies is contemplated, and the rights and privileges of shareholders and policyholders are definitely established. The two main kinds of company are the proprietary and the mutual. With the former, there are shareholders who take a certain percentage of the profits as dividends, but with a mutual company all profits belong to the policyholders. Two distinct branches of *life I.* are known as 'industrial' (see INDUSTRIAL INSURANCE) and 'ordinary', but many companies transact only the latter type. In the industrial branch, policies are issued for much smaller sums, and premiums are collected by agents of the company either weekly or monthly. In the ordinary class policies are rarely issued for less than £100, and notices are issued for the collection of the premiums which are due yearly, half-yearly, or quarterly, except under a special scheme whereby an automatic system of monthly premiums is arranged. There is now a wide variety of classes of policy to choose from, but there are two main headings—namely, with and without profit. Policies under the former carry the right to share in the profits of the company, and this benefit is usually given in the form of a bonus added periodically to the sum assured, although it can, if preferred, probably be taken in cash. No such

right accrues in the case of without profit policies, the premiums for which are therefore smaller. A life policy in its original form merely provided the sum assured at death, possibly within a certain time. This would now be called a term policy. It has been followed by the whole life policy, securing the sum assured at death whenever it may occur, up to which time the premiums are payable each year.

An equally important class of policy is the endowment assurance, securing payment at the end of a fixed term or in the event of previous death. With any class of policy it is possible by paying a higher rate of premium, to limit the number of payments to a maximum, and this is frequently done in the case of whole life contracts, in order to prevent having to continue premiums throughout a long life. A modern addition in life I. is an annuity benefit in the form of a temporary annuity, payable should the life assured die within a certain time from the date of the policy.

This is a 'family income' policy, intended to give extra financial assistance before the assured has had time to make adequate provision otherwise. It is not necessary for any policy to be effected on one life alone. The amount required can be made payable on the first or other death of two or more persons, or on the death of one person before another. Such contracts have their uses for business or financial transactions. The premium for whatever policy is selected depends upon the age at entry into I., and it is usual to quote for the age next birthday. The calculation of premiums is a highly technical work, which devolves on the actuaries of the I. companies. They rely upon various statistics in the form of mortality tables.

**Actuaries.**—As each premium is paid, a certain amount is absorbed in expenses, and of the balance, part goes to cover the current risk, while the remainder is held as a reserve to the credit of the policyholder against the time when the claim will arise. Thus when a policy has been in force for sev. years, it begins to be of value, and if the I. is no longer required, it can be surrendered to the company for cash. Alternatively, the company may be willing to lend on the security of the surrender value of the policy. It may also be possible to cease paying premiums and convert the policy into a fully paid one securing a reduced sum assured. The rates of premium quoted by any company are for normal healthy lives, and evidence of good health must be furnished by each proposer for I. At one time it was necessary in all cases to submit to medical examination by a doctor nominated by the company, but within certain limits as to age and amount of policy, it is now possible to effect an I. without examination. A person may insure his own life for whatever sum he pleases, but he can insure the life of another only if he has an insurable interest therein. In all cases a proposal form has to be completed, and any fraudulent statement thereon would void the contract. Questions as to family history and previous illnesses are asked, and if the answers or the result of the medical exam-

ination are unsatisfactory in any way, a higher premium than that tabulated may be charged, or the I. refused altogether. At one time life policies contained many restrictions as to occupation, foreign residence, or travel, but few limitations are today imposed. The main exclusion is that of suicide for a fixed period from the effecting of the I. The period varies according to the company chosen, but it is generally about a year. It is usual, also, to exclude certain special risks, such as motor racing, flying accidents for those engaged in aviation, active service in time of war, tropical climates when the assured is at the date of the policy known to be proceeding thither, and so on. But many special hazards may be covered by the payment of an extra premium, and for some particular occupation, and climates an extra premium is always required. Life I. has been recognised as an essential provision, and the premiums have been made, within limits, eligible for rebate of income tax. Although formerly the full standard rate of tax was allowed in this respect, the provision has been amended so that now relief can be claimed only at a reduced rate. This is, however, still a valuable privilege which substantially cheapens the cost of life I.

**Casualty and Contingency Insurance.**—This class of I. has seen considerable developments in the past few years. It embraces a wide range of both home and foreign miscellaneous classes of I. commonly known as accident business, which includes personal accident, workmen's compensation, motor, burglary, all risks, public liability, fidelity guarantee, all classes of engineering insurances, live stock, plate glass, and others. The field thus provided for the activity of accident underwriters is a very wide one.

Personal accident I. is the oldest of the above classes of I., and at one time was confined practically to the I. of travellers by train, and took the form of the payment of a small sum to cover a single journey. This ensured the payment of a certain amount in the event of accident resulting in the death of the insured during that journey. The present form of accident policy takes much the same form, with the exception that the premium, which is generally paid yearly or half-yearly, is adjusted to cover certain varying sums in the event of death or disablement, the result of accident from any cause during the year.

Personal accident I. is not a contract of indemnity. From its inception provision was made, as in life assurance, for definitely stated benefits on the happening of the event insured against, thus in many cases covering either more or less than the actual loss to the person insured. There are three divs. of the business: (a) accidents only, (b) accidents and specified diseases, (c) accidents and all sickness. Rates of premium are based primarily on the occupation of the proposer. The selective scheme is one of the most attractive. This really amounts to an analysis of the benefits and relative premiums of an accident and all-sickness policy, it being

left to the proposer to decide, subject to certain guiding principles, which benefits and for what sums he will insure. Separate revenue accounts have to be kept by I companies for personal accident business in this country and yearly returns must be made with regard to claims.

Prominent sickness policies can also be obtained under which the assured has a contract which can, at his option, be renewed during the whole of a period which may represent approximately his working life and under which he can continue to claim benefits whatever the duration of his disablement. The main feature of this branch of sickness I is that only medically selected lives are accepted. The premiums vary according to the age of entry.

Employer's liability or workmen's compensation I is it is usually called is a direct outcome of legislation. The Employer's Liability Act 1880 rendered the employer liable in a far greater measure than had previously been the case for accidents to his workpeople during the course of their employment. In the year certain officers were formed to transact employer's liability business together with other liability. The Workmen's Compensation Act of 1906 which brought under the scope of the Act every employer of labour, still further increased the demand for this class of I and seven new offices were formed whilst in addition the old I companies extended their operations to the accident field. Since that date seven Acts have been passed which have added still further to the employer's obligations, and the Workmen's Compensation Act 192 with supplementary Acts of 1940 and 1941 consolidated the law regulating compensation to workmen. It is applied to workmen in any employment but persons excluded from the class "workmen" are those not engaged in manual labour whose remuneration exceeds £10 a year, an out worker a member of the employer's family dwelling in his house, casual workers whose employment is outside the employer's trade, members of a public police force and persons in the naval or military service of the Crown. The maximum liability for death of an employee is the result of an accident arising out of and in the course of his employment was £600 and the maximum weekly payment during the period of total disablement for work in consequence of such an accident was 10s. If the disablement is permanent compensation was payable for the life of the employee. The scope of accident I was considerably widened by the National I (Industrial Injuries) Act 1916 which made a contributory social service the basis of compensation for industrial accidents without income limits. The benefit for complete disablement was raised to 15s.

Workmen's compensation policies are designed to undertake on behalf of the employer his entire liability to his workmen both at common law and under statute. Premiums are based on the total wages paid by the employer, and a certain rate per cent., according to the

nature of the work done, is charged upon such total wages. As the necessity for this class of I business arises out of the legislation passed by various govts., it is not surprising that the gov. keeps a close watch on it. In the first place I companies are required to make returns to the Board of Trade every year and these show clearly whether or not adequate reserve have been made. In the second place returns are made to the Ministry of National I on behalf of employers under various industrial groups giving the number of accidents reported during the year and the compensation paid in respect thereof. In the third place some measure of control is exercised over the premiums charged by virtue of an arrangement with the I companies who are members of the Accident Officers Association. These companies are to charge premiums which, taken in the business as a whole, will produce a claim ratio of 24 per cent. In the event of the ascertained claim ratio falling below that percentage the difference is allowed to policy holders as a reduction in the renewal premium.

Motor I comprises an important part of a client's I. Comprehensive policies may be effected and the various risks covered are as follows:—*For Private Car*—Public liability, injury to third persons and damage to property arising by through collision with the car, loss or damage, loss of or damage to the car, and accessories and spare parts, personal accidents to the insured, payments for the loss of limbs or eyes in connection with the insured car or whilst in other motor cars, medical and surgical expenses of occupants of the car, legal defence of the insured or driver, contents, travel, sea transit. *For Trade Motor Cycle*—Public liability, loss or damage, loss of or damage to the motor and its accessories and spare parts, legal defence, sea transit and from the Continent. *For Commercial Vehicles*—General Motor Cycle and Traders. *For Public*—Public liability, injury to third persons and damage to property caused by the use of the vehicle including (except in motor cycles) loading and unloading, loss or damage, loss of or damage to the vehicle or its accessories and spare parts, legal defence.

Within the scope of commercial motor I is included every type of mechanically propelled vehicle used for business or trade purposes except motor cycles, any vehicle coming within the definition of a private car, railway rolling stock and tramway rolling stock. The following additional insurances are added to motor policies by endorsement where required:—*For Private Cars*—(1) Loss or damage by theft or fire and accidental damage to rugs, coats and luggage. (2) Legal liability under Workmen's Compensation Act in respect of chauffeur. (3) mechanical breakdown. (4) compensation for time taken in repair of car after accident, (5) personal accident benefits to occupants of the insured car, (6) caravan trailers. *For Motor Cycles*—(1) Additional drivers, (2) pillion riding (3)

passenger risk (legal liability); (4) personal accidents to insured, other specific persons, any driver of motor cycle, or side-car passengers; (5) Continental travel; (6) employer's risk (liability to the public); (7) reliability trials; *For Commercial Motor Vehicles*.—(1) Loss of use; (2) passenger risk (legal liability); (3) spark risk; (4) goods in transit (damage by impact); (5) Continental travel; (6) employer's risk (liability to the public); (7) trailers. All motor policies which include loss of, or damage to, the motor vehicle exclude wear and tear; even when mechanical breakages are specially insured at an additional premium, any damage by wear and tear is excluded. Rates of premium for private car comprehensive policies are based mainly on horse power and partly on value, and for private motor cycles mainly on cubic capacity and partly on value. With regard to commercial motor vehicles, broadly speaking one or more of the following factors affect rates of premium for each class of vehicle:—horse power, value of vehicle, scope of cover required, locality of use, nature of use, type of vehicle, weight of vehicle and load, passenger seating capacity, and number of vehicles owned by the insured. Companies undertaking motor I. have to deposit £15,000 with the Supreme Court, irrespective of whether or not they carry on any other class of business. A policy of burglary I. is a contract of indemnity only, and secures the insured against the results of a crime, so that in the conduct of the business regard must be had to the criminal law of the country. Subject to any special provision in the policy, the circumstances in which a claim may arise have to be interpreted and decided by the rules of criminal law. Having regard to the wide range of the terms 'burglary and housebreaking', many policies only cover the risks of theft following actual violent or forcible entry into and upon the premises. It is obvious that in the case of valuable portable goods the rate of premium charged is considerably higher than that for more bulky and less valuable articles.

Plate-glass I. covers glass in any property against breakage through any cause, except fire, explosion, riot, and war. In these days 'plate glass' covers all descriptions of glass, including plate, sheet, embossed, lettered, shop facias, signs, ornamental street-lamps and glass in shop fittings. The I. company usually undertakes to replace broken glass, instead of making a cash payment. In private houses glass in doors and windows may be insured, the premium depending upon the rental value of the insured premises.

Fidelity guarantee enables an employer to insure against loss through the dishonesty of his employees. It is a common practice on the part of employers to require fidelity guarantee policies from any of their servants holding a position of trust.

Gov. and Court bonds are given by I. companies. They may be said to be required whenever any person is placed in a position of trust in relation to any department of the gov., or to any matter which

is before a Court of Justice. The following are the principal classes of gov. bonds: (a) Trustees and special managers in bankruptcy; (b) Official Receivers in bankruptcy; (c) trustees under the Deeds of Arrangement Act, 1914; (d) liquidators under the Companies Act, 1929, engaged in the compulsory liquidation of a limited company; (e) passage brokers. Bonds are given to the Board of Inland Revenue on behalf of Collectors of Taxes and Distributors of Stamps. There are many different kinds of bonds given to H.M. Customs and Excise on behalf of merchants, shippers, traders, and others to secure the revenue against loss by the improper use of articles which are subject to duty.

*Public Liability I.*—The earliest third-party policies were issued in connection with horse-drawn vehicles, but other risks were gradually accepted, and are now of unlimited variety. In the usual form of third-party I. the event giving rise to a claim is an accidental injury to the person or property of some stranger, alleged to be due to negligence or nuisance. The owner of horse-drawn vehicles can insure against fatal accidents to his live stock or damage to vehicles, or against any claims which may be made upon him by the public through the carelessness of his drivers. I. against third-party risks is an important part of motor I. (see above under *Casualty and Contingency Insurance*). The Road Traffic Act, 1930, introduced compulsory third-party I. for the first time. A firm may insure against claims made upon them by the public, through accidents taking place on their premises. The provision dealer may insure against claims made upon him through ptomaine poisoning, the dentist against claims through defective work, and so on. Another class of I. has appeared as a result of the various Housing Acts dealing with the housing of the working classes. The Act of 1925 provides that houses of a rental up to £40 in London, and elsewhere up to £26, shall be kept by the landlord in a condition reasonably fit for habitation and policies are framed to cover this responsibility.

Under the category of Contingency I. special indemnity policies are issued indemnifying against claims by missing heirs, or beneficiaries, claims under lost documents, and in respect of defects in title.

Engineering I. includes electrical machinery I., Lift I., Engine I. (steam, oil and gas), and steam-boiler I. Boiler I. has only recently been taken up. The policy covers damage to the boiler and damage to surrounding property, or injury to persons caused through an explosion. This class of I., however, provides an additional benefit in the shape of a thorough annual examination of the boiler and more frequent internal inspections. The business is something more than the ordinary I., and is consequently a class apart.

Brit. companies effect a large accident I. business abroad. Of its total premiums 56 per cent comes from the U.S.A., while a further 20 per cent comes from other places abroad, leaving 24 per cent from

this country (1938). This is a striking tribute to the prestige of Brit. I. houses. Recently there has been an increased demand for I. against disasters due to natural causes, such as hurricanes, and during the last few years heavy claims have been met respecting damage done by tornadoes in America.

Agrie. I. is undertaken more extensively in America, Canada, and Europe than in the Brit. Isles. In America injury by tornadoes and hurricanes to growing crops causes most damage, and a special branch of I. is effected to cover this contingency, while hail damage comes next in consideration. In Canada hail damage is the risk most widely covered, and frost damage I. is in operation in both countries, though more considerably in the U.S.A., where eighty-eight companies issue such policies. Livestock I. forms an important part of agrie. I. in the United Kingdom, though it is usually undertaken in reference to pedigree stock, and is designed principally to cover animal diseases and compulsory destruction of such animals by order of the gov. in the case of foot and mouth disease.

**Insurance against Air Raid Damage.**—Early in the Second World War, associations were formed for the purpose of organizing mutual insurance schemes against damage to property by air raids. It was soon evident, however, that no private association or company could hope to meet more than a negligible fraction of the claims that would ultimately be made. No existing I. companies would have dreamt of embarking on such hazardous business. The only solution lay in State action and, early in 1941, the Churchill gov. announced a scheme of compulsory I. for land and houses and a voluntary scheme for insuring movables against loss or damage by enemy action. These proposals were later embodied in the War Damage Act, 1941.

**War Risks State Insurance Scheme.**—Under the War Damage Act, 1941 (Part I.) the owners of land, buildings, and other immovable property were required to pay ann. premiums for the period 1941–45, by way of contribution towards the sums required to recomp. property owners for loss or damage by enemy action occurring between Sept. 3, 1939, and Aug. 31, 1941 (further legislation was passed for subsequent risk periods). Part II. of the Act was a gov. scheme for the insurance of private chattels against war damage and came into operation on May 1, 1941. Part I. was, but Part II. was not, compulsory. The amount ('contributory value') on which the premium was calculated was usually the net Schedule A assessment (before deduction of personal or special reliefs) in force Sept. 3, 1939. In general each of the five premiums or instalments of contribution was charged at the rate of 2s. in the pound. Each instalment or ann. premium was due on July 1, and was collected from the person who was the owner of the 'proprietary interest' on the preceding Jan. 1; and 'proprietary interest' meant the freehold or any lease of more than seven years. A contributor

whose proprietary interest was mortgaged might, in certain cases, recover a proportion of his net liability for an instalment from the mortgagee.

The term 'private chattels' in the gov. scheme for insuring private chattels, covered the movable belongings of a household (furniture, clothing, valuables, etc.), and also motor cars and cycles, yachts and boats. The State allowed free compensation for householders as follows: £200, with an extra £100 in the case of a married man, and an extra £25 for every child under 16. Every other adult person, who was not a householder, was allowed free compensation up to £50. Persons who had not insured and relied only on free compensation, might not receive more than £25 on any one article. Over and above the limits of free compensation a person could obtain additional cover by paying a premium and taking out a policy of I. The terms: £1 per cent up to £2000; £1 10s. per cent for the next £1000; £2 per cent for the next £7000. There was a minimum premium of £1. On 'valuables' (works of art, gold and silver plate, jewellery, etc.), the cover was limited to £100 in the aggregate or 20 per cent of the total sum covered by the policy, whichever was the greater. No more than £50 or 5 per cent of the total sum insured (whichever was greater) could be recovered on any one article. This applied to luxury articles of furniture, expensive radiograms, and valuables.

See N. Young, *Insurer*, 1927; H. Loman, *Insurance Principles and Practices*, 1928; J. G. Sinclair, *The evils of Industrial Insurance*, 1932; J. G. Anderson, *Birthplace and Growth of Life Insurance*, 1937; A. Wilson and H. Levy, *Industrial Insurance*, 1937; H. E. Raynes, *A History of British Insurance*, 1948; R. H. Swatton, *How Insurance Works*, 1948.

**Insurance, National**, see NATIONAL INSURANCE.  
**Insurance, Third Party**, see THIRD PARTY.

**Intaglio**, strictly speaking, a gem on one surface of which a design has been hollowed out so that if this side is stamped upon some material like wax, the design is impressed and stands out in relief. Is. among the Assyrians and Babylonians were usually cylindrical in shape, like the chalcidony signet of Darius I. of Persia, the workmanship of which is so justly admired today. The Egyptians used to cut their seals on the flat bases of the 'scarabs' or sacred beetle—a form which is very common also in Gk. Is. Gem-cutters at first used serpentine, but as their skill increased they preferred to work in onyx and other harder stones. Is. exist of gods, mythical heroes, historical people, etc., the best dating usually from one of the first three centuries B.C.

The term I. is used to describe printing processes in which the matter to be reproduced is below the general surface or the printing plate, i.e., in photogravure. The ink to be applied to the paper lies in the recesses of varying depth on the cylinders or metal plates.

**Integration**, mathematical process of summation which makes it possible to find the areas enclosed by curves and the lengths of arcs, the velocities achieved by accelerations, the volumes comprised by areas, etc. From its definition as a summation I. may be proved to be the inverse process to differentiation. The sign

for I. is  $\int$ . Thus  $\frac{d}{dx} x^2 = 2x$ , whereas  $\int 2x dx = x^2$ . See CALCULUS.

**Intellectual Co-operation, International Institute of.** In 1922 the League of Nations appointed a Committee which should examine international questions on the subjects of literary, scientific, and artistic work with a view to intellectual co-operation whenever possible. The Committee, which was likewise the governing body of the Institute, consisted of fourteen members, two of whom were women: M. H. A. Louwiz (Holland), M. J. Destree (Belgium), M. A. Janssen (Germany), Prof. Gilbert Murray (Brit. Empire), M. Panleuve (France), M. G. de Reynold (Switzerland), M. A. Rocco (Italy), Mlle. K. Bonnevay (Norway), Sir T. C. Bose (India), M. A. de Castro (Brazil), M. I. Casares (Spain), Mme. Curie-Skłodowska (Poland), M. L. Izozog (Argentine Republic), Prof. R. A. Millikin (U.S.A.). The first seven members formed the Board of Directors, which met every two months. Such subjects as the unification of scientific nomenclature, the international organization of bibliographical and scientific information, the development of cinematography, the extension of the laws protecting works of art and rights of artists, were only a few of the ambitious schemes of the organization. Its place is now taken by the United Nations Educational, Scientific, and Cultural Organization (see UNESCO).

**Intelligence Corps, see under INTELLIGENCE, MILITARY AND SECURITY.**

**Intelligence, Military, and Security.** This knowledge is power, is a maxim assiduously followed by all countries with respect to providing their military leaders with the most complete information available regarding all other states, particularly those which are potential enemies. Details of the military economy and other prime resources of an enemy give valuable data upon which a plan of operations may be based. In peace, this information can be obtained in many ways, e.g. the publication of a country's research by persons interested in various aspects of public life or particular areas of the enemy's country, spies and general information contained in the Press and journals. In war the difficulties, though greatly increased, are not insurmountable. Spies and persons of neutral countries are employed. These can supplement information procured by air-reconnaissance by the interception and decoding of enemy wireless messages, examination of captured equipment and documents, interrogation of prisoners, deserters, and escaped civilians, and reports from 'resistance groups' in occupied territories.

Intelligence is vital to an army, but it is almost equally important to deprive the enemy of such intelligence as may be valuable to his military leaders. This is the responsibility of the Security Branch, and includes censorship. If he cannot be wholly deprived of it then false intelligence is usually supplied to him which, in certain circumstances, is more effective than letting him have no information at all.

Intelligence is a responsibility of the General Staff at all levels. In the Brit. Army the Intelligence Dept. of the Staff is organized in two branches, A, responsible for collecting, collating and distributing information about the enemy and B, responsible for security. While the bulk of the information used by A comes from the observation of its own forward troops of all arms, the special requirement of B can only be served by special troops organized in Field Security Sections which are under command of fighting formation and line-of-communication commanders. Both types of intelligence work are carried out by the Intelligence Corps. This was embodied as a separate unit in July 1940 under the ultimate command of the Director of Military Intelligence. The name and the R.A.E. maintain intelligence depts.

**Intelligence Quotient (I.Q.), see under MENTAL TESTS.**

**Intelligence Tests.** There are numerous systems of tests in existence today for estimating the mental ability of children and adults for various purposes. Francis Galton was the first to discuss these tests in his *Inquiries into Human Faculty and its Development* (1869), and Alfred Binet (1858-1911), the first experimental psychologist, gave a series of tests for the measurement of human intelligence which is still employed today. See also MENTAL TESTS.

**Intendant** (Lat. *intendens*, from *intendere* to watch over) name given in early 17th cent. to an official invested by the king with important commission such as the levying of taxes, the administration of financial matters generally, etc. etc. The *intendants des provinces* date from the last thirty years of the sixteenth century, and were sent by the king to restore order in the provinces after the civil wars. In 1789 the office was abolished by the National Assembly, but the dignity was restored by Napoleon under the title of 'prefect'. See G. Huet, *Origines de l'institution des intendants des provinces*, 1884.

**Interborough Rapid Transit Company.** The company which operates the overhead and subway railways of New York, much as the 'Metropole' serves Paris, and the 'Underground' London. There are at present 117 m. of road, with 401 m. of track, part of this being of the overhead description that traverses some of the main avenues at a higher level than the street, and part being the underground tunnel railway.

**Interbourse Securities, stocks and shares** which are of an international character, i.e. those that are bought and sold on the London Stock Exchange, Wall Street, the



Paris Bourse, or any of the various stock exchanges of the civilized world. The best examples of such securities are gov't stock or shares, like Gk or Brazil bonds (but not Brit. consols, which are held almost exclusively by people in the United Kingdom), great gov't loans, Amer. railway bonds, and Indian securities. The business of negotiating the sale or purchase of I. S. is done by arbitrage dealers, whose mode of conducting operations in I. S. is to purchase or sell on one stock exchange a certain quantity of securities and synchronously or practically synchronously to re-sell or re-purchase (as the case may be) on the stock exchange of another country similar stocks or shares to such an amount as from the price (ascertainable by wire) will suffice to cover not only the incidental expenses of interest, commission, etc. but also brokerage. The great benefit of this arbitrage traffic is the resulting equalization of and stability in the prices of the great majority of I. S.

#### Interbred Retriever, *see* RETRIEVER

**Intercalary Days, or Months,** term given to months or days inserted in the calendar between others to adjust the reckoning of the year into *annus* with the solar year. The word 'intercalary' thus means something inserted or placed between, and is used for anything interrupting a series.

**Intercostal Neuralgia,** *see* under NEURALGIA

**Interdict** (1) *In Scots law*—like the I. in Roman or civil law, and the injunction (*q.v.*) of Eng. law, the I. in Scots law is a decree or order of the court to restrain any act or proceedings alleged to constitute an infringement or threatened infringement of another's rights. Like injunctions is either interim or final. An I. may be granted either by the Court of Session, the sheriff courts, or the interior or burgh courts. For illustrations of the matters in which an I. may be obtained *see* under INJUNCTION. (2) *Ecclesiastical Law*—excludes excommunication which prohibited the divine services, either to particular persons or particular places, or both. Private baptism was allowed during the time of the I., but the Holy Eucharist was not, except in *articulo mortis*, and Christian burial was denied in any consecrated place except it were done without divine offices. These I. s. though frequently exercised in the Middle Ages upon whole villages, towns, and even kingdoms, have been abolished, so far as England is concerned, since the Reformation. The effect of the placing of England under an I. by Pope Innocent III. on March 23, 1209, in retaliation for John's expulsion of those monks who had consented to the appointment of Stephen Langton as primate, is graphically described by Hume.

*See* Burns' *Ecclesiastical Law*.

**Interest,** allowance made for the use of borrowed money or capital. The rate per cent per annum is the I. on 100 units for one year. I. is payable periodically, usually half-yearly in commercial transactions, but frequently monthly in the case of loans by registered money lenders. I. is either simple or compound: the

former being payable on the principal alone, the latter on the amount of the principal and interest as and when it falls due. The exaction of I. was prohibited in England as early as 1197, and the prohibition rested, as elsewhere, upon religious grounds. The old usury laws fixed a maximum rate of I., varying at different times from 10 to 5 per cent, long after everyone had been convinced that the most entire freedom in commercial matters was both the right of the private individual and the benefit of the community. Bentham was the first writer who openly and systematically condemned the usury laws, and since he wrote no legislature has ventured to do more than 'reopen an unconscionable bargain' and in other ways to regulate the strictness of moneylenders by means of formalities of registration. Bentham like Mill, scolds the usury laws to religious bigotry, but attaches too much importance to that source. Aristotle's condemnation of usury rested on the assumption that money is intrinsically barren, and that I. was the productive addition to an unproductive object, which law became traditional and is quoted in Bentham's works as a popular fallacy among the poor. An elaborate refutation of the dogma that free access to the money market tends to encourage projectors is also one of the most trenchantly successful criticisms in the *Defence of Usury*. All restrictions have been long since abandoned by the legislature, and the rate of I. left to the discretion of lenders and borrowers. But the courts may interfere on equitable grounds to prevent fraud and overreaching, and loans to infants are invalid (*see* CONTRACT, INFANT). Under the Moneylenders Act, 1900 the courts may reopen moneylending transactions of a harsh and unconscionable nature, and reduce the rate of I. Under the Moneylenders Act, 1927 compound interest on loans by moneylenders is prohibited, nor may the contract provide for the rate or amount of I. being raised by reason of any default in the payment of sums due under the contract. But the contract may provide that if the borrower makes default whether in respect of principal or interest, the money lender shall be entitled to charge simple I. on the sum due, from the date of the default until the sum is paid, at a rate not exceeding the rate payable in respect of the principal if it from any default.

It is an economic commonplace that the rate of I. is the same in all trades in the same country and at the same time—a law which rests for its validity on the elimination from profits of compensation for risk of dishonourable reputation, and everything but pure I. on capital. But the risk in some occupations being greater and some trades requiring more supervision than others, there must always be differences in the rate of I. or profits in different trades at the same time, and in those trades or businesses in which the rate is higher than the bank rate—the criterion of the average rate—some economists contradictorily distinguish higher rate by the name *false* I. It is an accepted

position in economics that as wealth and pop. increase the rate of I. declines, because, among other causes, wealthy and populous communities afford less and less scope for any given quantity of labour and capital, a tendency which is the root principle of the Ricardian theory of rent; and again the increasing export of capital tends to produce a uniform rate for all countries. See J. Bentham, *Defence of Usury*, 1790; I. Fisher, *Theory of Interest*, 1930; J. Meade, *Rate of Interest in a Progressive State*, 1933; K. Wicksell, *Interest and Prices*, 1936; B. W. Dempsey, *Interest and Usury*, 1918. See also MONEY-LENDER and USURY.

**Interference**, term which in physical science indicates a phenomenon depending upon the action at one place of two sets of waves or vibrations. A familiar example which can be used to illustrate this is obtained by dropping two stones into a still pond at the same time. Circular ripples will be set up from each stone, and will eventually meet, causing disturbance. It is almost axiomatic that the greatest disturbance will occur when trough meets trough, or crest meets crest. And were the waves set up by the dropping of each stone equal in length, then when crest met trough, or vice versa, the wave motion would be entirely annihilated. It can be seen, therefore, that it becomes a fundamental principle in the science of light, sound, and electricity in particular. In these cases, however, the waves are usually too small for I. to be detected or observed by the senses, unless there is a continual succession of the two waves, reproducing the phenomenon at the same place for a long while. Thus in light it is necessary, in order to study I. effects, to obtain the two sources from the same ray. For the great complexity of light waves, and the fact that the waves act in all directions at right angles to the direction in which they are propagated, are conditions which prevent I. effects which are visible to the naked eye being obtained from two trains of equal waves, vibrating in mutually perpendicular planes. A simple experiment, demonstrating I. in light is, however, that known as Grimaldi's, as modified by Young. A simple ray of light, which we shall regard as homogeneous, is introduced into a darkened chamber, through two small apertures which are close together. These two divergent rays will interfere, with the result that on the screen opposite will be shown a series of bright bands separated by dark ones. The central one, which is the brightest, is placed so that all points on it are equidistant from each aperture, and is formed by the meeting of crest with crest and trough with trough. Theoretically the series of I. bands is composed of an indefinite number, but the fading away in brightness of those bands in practice is explained by the great difficulty of obtaining pure homogeneous light. See SOUND, NEWTON—*Newton's Rings*; SOAP BUBBLES; SPECTRUM; DIFFRACTION; POLARISATION OF LIGHT; and ELECTRICITY—*Electro-magnetic Waves* and *Maxwell's Theory*.

**Interferometer**. Optical instrument for producing interference fringes by the superposition of two beams of light originating from the same source, and for measuring the displacements of such fringes caused by a slight increase of path difference between two beams. The I. is the most accurate instrument for the measurement of the wave-lengths of light. Michelson's and Fabry and Perot's Is. are the best known instruments. The principle of the former has been applied since 1920 to the measurement of the angular diameter of some stars that were not near enough to be resolved by the most powerful telescopes then known. Another I. is Rayleigh's which is used for measuring small differences in the refractive indices of gases. See also INTERFERENCE and SPECTRUM AND SPECTROSCOPE. See A. Schuster, *Theory of Optics*, 1901.

**Interim** (Lat., in the meantime), name given during the Reformation to certain attempts made in Germany to draw up a formula which would serve as a basis of agreement between Catholics and Protestants, until such time as a general council could be held. Three attempts were made to bring this about, resulting in the 'Ratisbon Interim' in 1511; the 'Angsburg Interim' (q.v.) in 1518; and the 'Leipzig Interim' in 1518.

**Inter-Imperial Relations Report**, report of a committee of Prime Ministers and heads of delegations to the Imperial Conference, presided over by Lord Balfour, and unanimously adopted by the Imperial Conference of 1926. As regards its general principles, the report states that equality of status is the root principle governing inter-imperial relations so far as concerned Great Britain and the dominions, which are described in the report as 'autonomous communities within the Brit. Empire, equal in status, in no way subordinate one to another in any respect of their domestic or external affairs, though united by a common allegiance to the Crown, and freely associated as members of the Brit. Commonwealth of Nations.' The report points out, however, that the principle of equality and similarity appropriate to status does not universally extend to function. See further under DOMINION STATES. See also WESTMINSTER, STATUTE OF (1931).

**Interior Decoration**, see under HOUSE; and PAINTING and DECORATING.

**Interlaken** ('between the lakes'), in the canton of Berne, Switzerland, a health resort much frequented by visitors, with an elevation of about 1863 ft. It is 26 m. S.E. of Bern, between lakes Thun and Urien, on the R. Aar. It has magnificent mt. scenery, the Hoheweg commanding a fine view of the Jungfrau. Pop. 1000.

**Interlineations**, in law, additions to or alterations of a written instrument made either before or after the execution of the instrument. As a rule, I. made after execution having the effect of altering or amending the instrument in a material particular will prevent the enforcement of any rights created under the instrument. It is otherwise with I. made before execution, provided they were made with the

consent of parties whose rights are affected by the instrument. The rule of evidence is that I on the face of a deed are, in the absence of evidence to the contrary, presumed to have been made prior to execution, but in a will I are presumed to have been made after the testator signed his will. I which do not affect the rights of parties who are under any liability created by the instrument are immaterial. I made in a will should always be signed and attested, as in the case of the body of the will, and a similar precaution should be observed in regard to those made in a deed or other instrument.

**Interlocutor**, in Scots law strictly a judgment or judicial order pronounced in the course of a suit which does not finally determine the issue (cf. **INTERLOCUTORY PROCEEDINGS**). But in practice it appears to be applied to all judgments or orders of the court, whether they finally dispose of the case or not.

**Interlocutory Proceedings**. Applications or motions before a judge, master or district registrar in chambers, for some preliminary order, decision or judgment in an action, are called I. P. An order made in I. P. does not finally dispose of the case but, as a rule, decides some matter incidental to the proper conduct of an action. Interim injunctions (see **UNDER INJUNCTIONS**) however, although not final, have the effect of final judgments if on the trial it is established that a proper case has been made out for an injunction. Application in chambers must be made by summons, or by notice of application under the summons for directions (or summons which asks the master to give directions as to the future conduct of proceedings in such matters as discovery of documents, pleadings, etc.) unless made *ex parte* when no such formality is required. Applications to the court are made by motion and as a rule at least two clear days' notice of motion must be given unless the court gives leave to the contrary.

**Interlude** (Lat. *inter* between, *lulus* play), a short piece of musical performance formed between the acts of a play or between the verses of a hymn. In drama a short performance given between the acts of a play or in the intervals of a banquet or court pageant. The characters were as a rule merely personified qualities such as Mercy and Youth. This kind of stage production, as well as moralities and mysteries, succeeded the older miracle plays and in the early part of the sixteenth century, with the comedies of Nasal and the tragedies of Sackville and Norton kept the dramatic field until the appearance of the new school created by the Elizabethan dramatists. John Heywood (1477-1580) wrote 16 and introduced a notable change into his characters by making them represent types and classes of men, such as pedlars and friars instead of qualities. His prin. 15 were *Johan, Iub his Wife* and *Sir John the Preeste* 1533, *A Merry Play betwene the Pardoner and the Friere the Curate and Neighbour Pratte*, 1533 and *The Play called four P's a new and very Merry Interlude of a Palmer, a Pardoner, a Policar, and a Pedlar*, 1543-17.

**Intermarriage**, see **CONSAQUINITY** and **MARRIAGE**.

**Interment**, see **BURIAL ACTS** **BURIAL CUSTOMS**.

**Intermezzo** (It., interlude). Originally any musical piece played between the acts of a larger work, musical or theatrical. e.g. Purcell's 'act tunes' serving as interludes to plays; the entr'actes in Schubert's *Rosamunde*. Later a short concert piece not necessarily designed for any purpose implied by the name. e.g. Brahms's *Intermezzo* for piano. An I. may also be an instrumental piece played during an act of an opera while the action is arrested (e.g. in *Misericordia* (*avallera rush*)).

**Intermittent Fever**, see **MALARIA**.

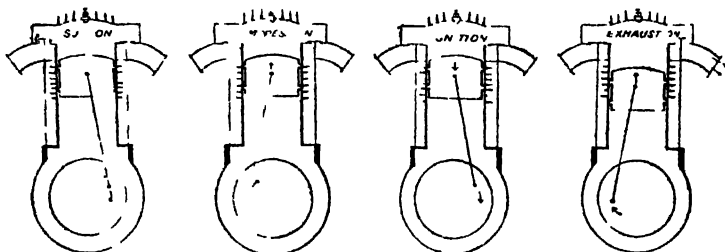
**Internal-Combustion Engine**, is one in which the chemical energy latent in the fuel is released by combustion or explosion in the engine itself instead of being converted in a furnace into heat used to generate steam in a boiler. The expansion of the gases produced by the combustion constitutes the mechanical driving force acting directly on the piston in the reciprocating engine or the blades in the gas turbine. In the simplest of all I. C. is the rocket motor, the gases escape through a nozzle at the rear end and the reaction or recoil on the body of the rocket drives it forwards. In actual practice the term I. C. I. covers the reciprocating (cylinder and piston) type only. The gas turbine (see **AIR PROPULSION**) is of recent origin and at present being actively developed in connection with jet propulsion of aircraft, and for use in locomotives, motor cars (71) and as prime mover in electric power stations. The reciprocating engines are conveniently classified according to the fuel used, as oil engines (71) using heavy oil, petrol engines (see **MOTOR CARS**) using light oils and gas engines (71) using gaseous fuels. No heat engine can convert into mechanical work more than a fraction of the heat content of the working substance (see **ENTROPY** **THEORY**). In I. C. I. the working substance is the fuel, mixed with air since no fuel can burn except in contact with air. The thermal efficiency of an engine is the fraction of the heat input which is converted into mechanical work, it varies according to the type of engine and is largely dependent on the compression ratio which is the ratio of the cylinder volume above the piston when at its lowest position (expansion) to the volume above the piston at its highest position (compression clearance or compression space). The calorific value of a fuel is the amount of heat (in B.T.U.) liberated by combustion of 1 lb. of liquid or 1 cu. ft. of gas fuel. see **British Standard Specification**, 201. The gas fuels in common use are:

	B.T.U. per cu. ft.
Natural gas	cal. value 700-1 000
Coal (tar) gas	" " 400-500
Producer gas	" " 161
Blast furnace or	
Coke oven gas	" " 100

Oil fuels are liquid mixtures of hydrocarbons (compounds of hydrogen and

carbon in various ratios) mostly obtained by fractional distillation of petroleum. The light oils (gasoline fraction, petrol) of specific gravity 0.68-0.78 have a boiling point of  $40^{\circ}$ - $200^{\circ}$  C, calorific value 19,000 B.Th.U./lb. They may also be obtained by cracking, a chemical process whereby higher boiling fractions are broken into lower boiling compounds. Benzol is obtained by distillation of coal tar and consists mostly of pure benzene. Heavy oils have a specific gravity 0.78-1 and boiling point above  $275^{\circ}$  C. Coal hydrogenation and coal and coal oil distillation also yield both light and heavy oils, and these processes are likely to become of great importance in the future. Besides the calorific value the anti-knock value of a fuel is a most important characteristic. When the compression ratio exceeds a certain limit the fuel detonates on ignition instead of burning with a steadily progressing flame and this

provided with inlet and exhaust valves at the top end, the opening and closing of which are accurately timed and operated by the engine itself through the camshaft. In the gas engine the mixture of gas and air is sucked into the cylinder at nearly atmospheric pressure during the induction, the inlet valve being open, the exhaust closed. As the piston begins to rise, the inlet is also closed, the mixture being compressed. When the piston approaches its highest position the mixture is ignited, usually by an electric spark and the expansion of the combustion products drives the piston down. Just before it reaches the bottom the exhaust opens and the rising piston sweeps the burnt gases out (scavenging). The cycle is then repeated. Some engines, especially of smaller size (1-5 h.p.) work on the 2 stroke principle. As the piston rises on the compression stroke a fresh charge is drawn into the



INTERNAL COMBUSTION ENGINE

knocking results in excessive wear of all moving parts. The anti-knock value of a light oil fuel is expressed in octane number, i.e. the percentage volume of iso-octane in a mixture of heptane and iso-octane having the same knocking tendency as the fuel in question. The higher the octane number of a fuel, the higher is the compression ratio that can be used without knocking. Generally the compounds with the most compact molecule (in saturated and aromatic hydrocarbons) have the higher octane numbers, while the paraffins are less good. The light oils obtained by cracking have higher octane numbers than those obtained from straight run distillation. By addition of 'dopes' certain chemicals such as lead tetraethyl the octane number may be increased. The heavy oils are characterized by their cetane number, the percentage of cetane in a mixture of cetane and a methyl naphthalene producing the same ignition lag.

Most I.C. engines work on the 4 stroke cycle, i.e. power is supplied to the piston during one out of every 4 strokes, the flywheel keeping the engine running during the remaining 3. This cycle was first successfully applied to the gas engine by N. A. Otto (1876). The strokes are known as induction, compression, expansion (power), and exhaust. The cylinder is

crankcase and when the piston descends on the power stroke the charge in the crankcase is compressed. Towards the end of the power stroke the piston uncovers a port in the cylinder wall connected with the crankcase through a by-pass through which compressed charge enters the cylinder sweeping the burnt gases out through an exhaust port, likewise uncovered by the piston. A ridge on the top of the piston guides the entering charge towards the top of the cylinder and prevents its being mixed with the exhaust gases. Thus the compression stroke is also an induction stroke and the power stroke is also a compression stroke. The 2 stroke engine has no valves and is simpler in construction, but owing to imperfect scavenging and loss of fuel, it is less efficient than the 4 stroke engine. In the petrol engine the volatile liquid fuel is broken up into a fine mist and mixed with the correct proportion of air in the carburettor (q.v.). Thereafter the engine behaves as a gas engine. In the modern compression ignition (heavy oil) engine first practically realised by Rudolph Diesel (1892), pure air only is drawn into the cylinder on the induction stroke, and this is compressed to about 400-600 lbs. sq. in. whereby the temp. rises to  $1000^{\circ}$  F. At the end of the compression stroke the oil is injected into the cylinder under high

pressure, through a fine nozzle, and ignites on coming into contact with the hot air. Expansion and exhaust follow as for the other I C Es. The I C E has a higher thermal efficiency than the petrol engine, 30-36 per cent as against 22-25 per cent, the compression ratio being of the order of 12-16 as against 6 in the petrol engine. It exerts a higher torque at slow speeds, the fuel is less easily inflammable and so fire risks are less. The oil is also less volatile and loss through evaporation is insignificant. On the other hand, the oil engine is heavier in weight per horse power, it is not as smooth in running at low load and has not the accelerating characteristics of the petrol engine. Oil engines are now built for speeds of 1000-2000 r.p.m. whereas petrol engines are available for speeds up to 6000 r.p.m. See J. O'Kall *Internal Combustion Engines*, 1922; J. Lamb, *Running and Maintenance of the Marine Diesel Engine*, 1939; H. R. Ricardo *The High Speed Internal Combustion Engine*, 1911; S. J. Young and R. W. Pryor *The Testing of Internal Combustion Engines*, 1914; I. T. Vincent, *Supercharging the Internal Combustion Engine*, 1948; H. F. Wimpers *The Internal Combustion Engine*, 1931.

**International Affairs**, Royal Institute of, see ROYAL

**International Bank for Reconstruction and Development**, was established by the United Nations Monetary and Financial Conference held at Bretton Woods (see BRETON WOODS AGREEMENT) U.S.A. in July 1941. Its function is to assist in the reconstruction and development of members by facilitating the investment of capital. The authorised capital stock is \$10 million, divided into 100,000 equal shares available for subscription only by members. An Act giving effect to the Bretton Woods Agreement in the United Kingdom was passed in Dec. 1941. The bank may operate either by making or participating in direct loans out of its own funds, or out of funds raised in the market of a member, or otherwise borrowed, or by guaranteeing loans made by private institutions. The bank consists of a board of governor-executive directors who are responsible for the conduct of the bank's general operations, a president and staff. The first chairman, Dr. Hugh Dalton (Britain) was succeeded in Sept. 1941 by O. K. Yu (China). The U.K. representatives are Sir Stafford Cripps, governor, with Sir Gordon Munro as executive director; T. W. Snyder as U.S. governor and Eugene Black (provisional chairman) executive director. The president and vice-president are John McCloy and Robert L. Garner, U.S.A. The staff numbers about 13. Its first loan was \$250,000,000 of seq. to France in May 1947. This was followed in Aug. 1947 by three more loans to Europe—\$19 million to the Netherlands, \$10 million to Denmark, \$12 million to Luxembourg. After that the pace of lending decreased and only two small loans were made in 1948—\$16 million to Chile for hydro electric development and agric. machinery and \$12 million to four Dutch shipping

companies to buy ships in the U.S. In Jan. 1949 \$34 million was lent to Mexico and \$7 million to a Brazilian traction, light and power company, both largely for hydroelectric schemes. By the end of 1948 the European situation had disintegrated so far that the European Recovery Plan (I.R.P.) had taken the place of reconstruction loans from the bank as the source of European reconstruction. In the early stages of the discussion of the Marshall Plan (see EUROPE, *Marshall Plan*) it was expected that the bank would be able to supplement the I.R.P. grant with unspecific projects. But as I.R.P. has developed the possibility of any significant bank lending to Europe during the four years of the programme has declined. The difficulties of divided responsibility for the financing of European recovery made it unlikely that the hopes entertained as recently as 1948 would be realised until the Marshall Plan period was near its end. With one of its original functions (loans for reconstruction) taken over by the U.S. go., the bank turned from reconstruction to development. But up to 1945 it was unable to find as many projects ready for financing as it would have liked to handle, while other promising projects took longer to put into shape than expected. One defect lay in the narrowness of the articles of agreement of the bank which made no provision for technical assistance. For not only were the countries of S. America, parts of Africa and the Middle East underdeveloped but they were also so short of technicians that they were unable to put its schemes in such a form as to make it possible to appraise their prospects without much additional work for which the bank was not equipped.

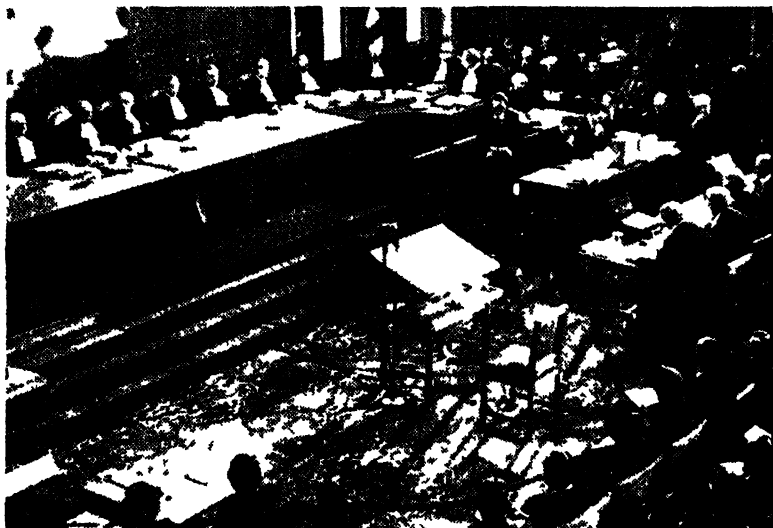
**International Bureau of Commercial Statistics** was established in 1913 at Brussels and was instituted for the purpose of unifying commercial statistics from all countries with a view to their publication annually. Its chief interest is the study of imports and exports and the issue of complicated and valuable tables of statistics showing the relative positions of countries and their productions viewed from nearly every conceivable aspect. An annual bulletin is produced affording matter relevant to the study of the progress of commercial and trading development.

**International Chamber of Commerce** was founded in 1923 at Brussels in order to further the welfare of international trade. Most of the important States are represented on it. The range of its functions extends to the development of trade between nations, the adjustment of hampering restrictions and, generally, the regulation of international business relations. Its administration is in the hands of an elected council representative of the affiliated nations. The decisions of the council are carried out by a secretary-general and a committee, who are under the supervision of the president. Its meetings take place every two years, when reports are submitted and trade questions discussed. It has London offices at 14 Queen Anne's Gate, Westminster, and 14 Queen

International Court of Justice, in all essentials is the old Permanent Court of International Justice under a new name. Its Statute which forms part of the Charter of the United Nations (*q.v.*) is the Statute of the Permanent Court with a few unimportant changes and contains provisions designed to ensure continuity between the two.

Like the old court, the new contains fifteen judges of different nationalities, elected for a nine year term by simultaneous voting in the Security Council and the

methods. It therefore did but little to develop international law. The P. C. of I. J. was constituted during the second Assembly of the League, formally opened Feb. 15, 1922, and held its first session June 15, 1922, in the Peace Palace at The Hague. The Charter of the court was founded on the scheme provided by Article 11 of the Covenant of the League of Nations (*q.v.*). Some notable cases to come before the court were *The Wimbledon* (1921) a dispute between France and Germany over a vessel which was carrying



THE INTERNATIONAL COURT OF JUSTICE

*Fluxus News*

The court at The Hague on July 26, 1948 when the case was presented by Britain, Greece, and Albania over the rights in the Corfu Channel. The British and Greek cases in October 1946.

General Assembly, which in this context succeeded to the functions of the Council and Assembly of the defunct League of Nations. The Statute also contains similar provisions for safeguarding the independence of the judges (*q.v.*), that they may not exercise any political or administrative office or practice a profession. They are removable only by a unanimous vote of their own colleagues on the bench. Prior to the First World War there had existed no convention for the creation of a permanent court, but it remained in abeyance because the conference of 1907 could not agree on the method of appointing judges. Thus the only previous provision for settling international disputes was by way of arbitration, a method which, while effective to meet the demands of a particular and momentary situation, lacked the essential qualities of a tribunal proceeding according to precedent and systematised

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Only States may be parties to the I. C. of J., but though individuals have no direct access, a State may take up the claim of its national, and in international litigation this is a familiar kind of case. As in the Permanent Court, the submission of cases is still voluntary, but the so-called 'Optional Clause' (*q.v.*) has been incorporated in the new Statute. Under this States may declare in advance their

willingness to recognise the Courts' jurisdiction as compulsory, in relation to any other State accepting the same obligation, whenever a dispute falls under certain heads, the most important being the interpretation of treaties and questions of international law. Under the old Statute acceptances of this clause were numerous and where these are still in force they are deemed acceptances under the new Statute subject to such reservations as existed previously. But acceptance of the Optional Clause does not create a truly compulsory jurisdiction; it means merely that a State has agreed that in certain circumstances it will allow itself to be sued without the necessity for concluding a special agreement after an actual dispute has arisen. The question of a truly compulsory jurisdiction for the Court remains the most controversial issue of its future (Prof. J. L. Brierly). The new Statute expressly states, what was implicit in the old, that the function of the court is to decide the disputes submitted to it in accordance with international law. Conventional language describes disputes which a court can decide as 'justiciable' and those which it cannot as 'non-justiciable,' misleading terminology, since any dispute is justiciable if the parties choose to make it so, it being for the court to decide whether or no any particular claim is well founded in law. Generally speaking it is evident that political methods of settlement will always be necessary internationally just as they are nationally, and the judicial method can never replace them.

The Court itself has no means of enforcing its judgments; but all the members of the United Nations have bound themselves to comply with its judgments, and Article 94 of the Charter provides that if a party fails to obey a judgment against it the Security Council may 'make recommendations or decide upon measures to be taken to give effect to the judgment.' What sort of measures or sanctions the Council could or might put into force and what would be the precise effect of its 'decision' is left uncertain.

**International Date or Calendar Line,** the line where the change of date occurs. It is a modification of the 180th meridian, and is drawn so as to include islands of any one group on the same side of the line, or for political reasons. It is indicated by joining up the following nine points:

Latitude	Longitude	Latitude
60° S.	180°	154° S.
51½° S.	180°	5° S.
45½° S.	172½° W.	18° N.

**International Institute of African Languages and Cultures,** estab. at a conference held in London, June 29-30, 1926, to which were invited representatives of some twenty-three scientific, educational and missionary associations in various countries. A draft constitution was adopted for the society, whose first trustees were Sir Frederick Lugard (q.v.), Sir Humphrey Leggett, and Mr. Harold

Godfrey Judd. On the original executive council were a number of persons distinguished in African sociology, including Sir Frederick Lugard, C. M. G. Seligman, a distinguished anthropologist, Prof. Levy Bruhl, Rev. Edwin Wm. Smith and others. The objects of the Institute, whose headquarters are at 22 Craven Street, London, W.C. are: to study the languages and cultures of the natives of Africa; give advice and aid in the pub. of studies on African languages, folklore and native art; estab. a bureau of information for persons interested in linguistic and ethnological researches and educational work in Africa; assist in producing an educational literature in the vernacular; encourage international co-operation in all questions connected with the mental development and technical advancement of the people of Africa. The Institute pub. a memorandum on a wide range of topics relating to African social anthropology and linguistics. Its *Journ. Africa* is pub. quarterly.

**International Institute of Intellectual Co-operation,** see INTELLECTUAL CO-OPERATION.

**International Labour Organisation.** The I. L. O. of the League of Nations arose out of the treaty of Versailles. One of the first decisions of the Peace Conference of 1919 was the formation of an Industrial Commission under the chairmanship of Mr. Samuel Gompers, President of the Amer. Federation of Labour. Their deliberations resulted in Part XIII. of the treaty by which the I. L. O. was set up declaring the following general principles:—(1) That labour should be regarded not merely as an article of commerce; (2) The right of association by the employed as well as by the employers; (3) The payment to the employed of a wage adequate to maintain a reasonable standard of life; (4) The adoption of an eight hour day or forty-eight hour week; (5) A weekly rest of at least twenty-four hours, including Sunday where possible; (6) The abolition of child-labour and the imposition of such limitations on the labour of young persons as shall permit the continuation of their education and assure their proper physical development; (7) The principle that men and women should receive equal remuneration for work of equal value; (8) The standard set by law in each country with respect to the conditions of labour should have due regard to the equitable economic treatment of all workers lawfully resident

therein; (9) Each state should make provision for a system of inspection, in which women should take part, in order to ensure the enforcement of the laws and regulations for the protection of the employed.

The composition of the I. L. O. consists of a General Conference of delegates of all Member States, a governing body, and an International Labour Office which is the permanent Secretariat. Each State sends

four delegates to the annual Conference, two for the gov., one for the employers, and one for the employed. These delegates are chosen by the gov., with the approval of the predominant organisation of their respective groups.

The Conference embodies its decisions in three ways: a Draft Convention, a Recommendation, or a Resolution; but since International Law is based on the first two, they are the most important of the three. The first, the Draft Convention, resembles a treaty, and is submitted to the national authority; but it requires for ratification a two-thirds majority and

were adopted between 1919-39. Of the sixty-three countries thirteen have not ratified a single convention. Except for the Soviet Union, which was a member only for a short time, these countries were of minor industrial importance, but a number of progressive countries have recorded very few ratifications. The U.S.A. have ratified only five, Canada nine, Australia twelve, China thirteen, Czechoslovakia, India, and Switzerland fifteen, and so on. No country has ratified more than one half of the conventions. Great Britain and Spain leading with thirty-four. Still more revealing are the statistics showing



League of Nations Union

#### THE INTERNATIONAL LABOUR OFFICE, GENEVA

in any case it must be brought before the parliament concerned within a year from its adoption by the organisation. A Resolution consists of a statement of general policy and is clearly of but small practical value. The Executive Board of Management is the governing body of the I.L.O. and consists of twenty-four members, half being gov. delegates and equal numbers of employers' and workers' representatives. The International Labour Office of Geneva is the Secretariat.

The twenty-ninth Session of the International Labour Conference held in Montreal (1946) discussed constitutional changes which if finally adopted, may profoundly influence the effectiveness of the I.L.O. as a working body and as a means of raising world labour standards. A draft agreement was drawn up defining the I.L.O.'s relations with the United Nations. The I.L.O. in 1946 had fifty-two members (as against sixty in 1940, Italy, Germany and Japan having by then withdrawn) but at one time or another sixty-three countries have been members and altogether sixty-seven conventions

the disparity between the number of conventions voted for by gov. delegates but not ratified by the gov's. These show that the gov. delegates of Czechoslovakia have voted for forty-six conventions which were not afterwards ratified, those of Denmark forty-three which were not ratified, Brazil forty-two, Canada and Norway forty, Poland thirty-seven, France thirty-five, Sweden thirty-four, and Belgium thirty-three. The figure for the U.S. was sixteen and for Great Britain thirteen. The obvious implications of these figures were that delegates were obtaining a reputation for a progressive attitude by supporting proposals which the gov's. they represented had no intention of putting into effect, or that they were not giving sufficiently serious consideration to the practical implications of the adoption of conventions. There is a considerable difference of view between labour standards in the more advanced countries and in others, especially in the Far East and in colonial dependencies. Whether it is sounder policy to adopt conventions which will be of practical value in western



countries but which cannot be expected to secure ratification by the less advanced nations, or to adopt lower standards and hope to raise world working standards more nearly to the same level, with the concomitant risk that delegates from the advanced countries will lose interest, is not easy to say. Doubtless much would depend on the state of public opinion in the various countries at the particular moment and the extent to which that opinion can find expression. There are differences of opinion as to whether the changes proposed at the last Conference go far enough: the less practical would like to see the enforcement of conventions made compulsory for all members—an ideal which can hardly be reached before the apotheosis of national sovereignty begins to lose some of its force. But it may be reasonable 'to hope that in some sort they will make gov. delegates consider more carefully the practical implications of their votes and help to turn the mt. of words piled up by the I. L. O. into bread and butter for workers everywhere' (*The Times*, Sept. 18, 1946).

Attempts had been made by advanced reformers long before 1919 to organise labour internationalism. Robert Owen was one of the first in Great Britain. He unsuccessfully addressed a memorial to a Conference of the Holy Alliance at Aix-la-Chapelle in 1815. In 1837 Daniel Legrand, a Lotharingian employer, addressed all the European Govs. similarly. Later from 1880 to 1890 Albert de Mun of France, Kopp and Winterer in Germany, Helleputte in Belgium, and Prince Liechtenstein in Austria worked to such purpose that in 1893 Pope Leo XIII. issued his famous *Rerum Novarum* on 'the Condition of the Working Classes.' In 1897 a great International Labour Conference was held at Zurich, and in 1900 an International Association for Labour Legislation was formed in Paris under the chairmanship of M. Millerand; associated with him was M. Albert Thomas who became the first director of the International Labour Office when it was set up in Geneva. The I. L. O. pubs. many documents and periodicals, among them being: *The International Labour Review* (monthly); *Industrial and Labour Information* (weekly); *Bibliography of Industrial Hygiene*; *International Labour Directory*.

**International Law**, comprehensive term (coined by Bentham) denoting the sum of those rules of conduct which obtain among modern civilised nations, and which regulate their mutual relations and intercourse. The 'persons' or 'parties' known to I. L. are states, and normally such sovereign independent states as are recognised members of the family of nations (on the nature of the artificial conception of state, see GOVERNMENT, STATE), or that 'aggregate of states which, as the result of their historical antecedents, have inherited a common civilisation, and are at a similar level of moral and political opinion' (Prof. Holland). The question how far this international or rather interstate code of morality may appropriately

be designated 'law' has formed the subject of an extraordinarily prolific literature. One school of jurists follows the narrow but logical Austinian analysis of law, maintaining that no rule can be a law positive unless set by a given sovereign to his subjects and sanctioned by force, and that international 'law,' which must not be confused with the *jus gentium* (q.v. and see also EQUITY) of the Romans, is no more than a body of principles, adherence to which on the part of individual states or nations is sanctioned by the fear of war. But another school of publicists and jurists, while not for the most part venturing directly to controvert the Austinian analysis, asserts that laws are not necessarily sanctioned by force so much as by the play of public opinion, and that the want of an actual authority to enforce observance will not deprive of their legal character rules which men habitually and conscientiously obey without any thought of fear inspired by some controlling authority. The mere fact, however, that no modern civilised state would openly declare its unwillingness to be bound by such rules as have now received the seal of international approval at The Hague conferences, and that many have submitted to arbitration with at least a show of good grace, does not alter the fact that treaties or conventions are frequently violated and immunity gained only at the price of fear of superior armaments. In Germany, for some years before the Second World War, the Ger. Gov. broke treaties without scruple, and during the war showed that they felt bound by no 'laws' other than those of expediency. The true view would seem to be that positive or municipal law and a rule of international morality have points of resemblance, but differ essentially in point of promulgation and enforcement. There is a similarity from the fact that conformity to each does to a great extent rest upon consent freely given from the recognition of an inherent and sound ethical standard. The jurisprudential aspect of I. L. is neatly summarised by Prof. Holland as the 'vanishing point of jurisprudence,' since it lacks any arbiter of disputed questions, save public opinion, beyond and above the disputant parties themselves, and since, in proportion as it tends to become assimilated to true law by the aggregation of states into a larger society, it ceases to be itself, and is transmuted into the public law of a federal gov.' An ambitious but ill-fated attempt to provide international rules with definite sanctions was made in the sanction clauses of the Covenant of the League of Nations (see COVENANT). The Covenant provided a wider sphere of I. L. with a coercive power such as it had not hitherto possessed, and in jurisprudence is the most significant part of the Covenant. A further, if less striking, attempt to give international rules definite sanction was made in the Treaty of Washington, 1922. The treaty provides that belligerent submarines shall be subject to the rules that govern surface warships in visit, search, and capture, and that violation of these rules is declared to be piracy punishable

by the civil or military authorities of any Power within the jurisdiction of which the pirate may be found. Thus the treaty endeavoured to remove from the sanctions of the laws of war the fatal defects which the First World War made so patent. Experience in the Second World War afforded no evidence of any neutral availing itself of this power. While Britain stood alone, the sole defence against the ocean-wide and illegal activities of the Ger. U-boats was the Brit. Navy and its Fleet Air Arm.

*Agencies or Sources of International Law.*—These according to Wheaton, are: (1) Text writers of authority on the approved usage of nations, such as Avala (*q.v.*), Grotius (*q.v.*), Puffendorf, Bynkershoek and Vattel; (2) treaties of peace, alliance, and commerce; (3) ordinances of particular states prescribing rules for the conduct of their commissioned cruisers and prize tribunals; (4) the adjudication of international tribunals, such as boards of arbitration and courts of prize; (5) written opinions of official jurists given confidentially to their own govts.; and (6) the hist. of the wars, negotiations, treaties of peace, and other transactions relating to the public intercourse of nations. All these sources are invoked by Wheaton as guiding the modern publicist and statesman in the search for a rule so generally recognised as to amount to a rule of I. L. Paradoxically enough, though there was until recently next to no written I. L., there has for some considerable time existed an encyclopedic bibliography of opinions on the principles underlying its now generally recognised usages. But too much importance must not be attached to the opinions of jurists, because, while some rely upon practice and precedent, or the decisions of a court and the act of a gov., others prefer the theoretical speculations of eminent predecessors. The latter, however, are in a minority in these days of precedents, though it was otherwise in the days when the works of Grotius, Avala, and a few others were almost the sole source of information. Treaties are the most important source, if we include under that term every form of convention, contract, or declaration made between or ratified by different states. The Declaration of Paris, 1856, the Geneva conventions of 1861 and 1906, the conventions drawn up by the representatives of most of the leading nations at the various Hague peace conferences have by their combined effect led to the evolution of a tolerably comprehensive body of express I. L. purporting to regulate the usages of war, ameliorating the condition of the sick and wounded in war, whether on land (the Geneva Convention) or at sea (Hague Convention, 1899). These sources have, since the First World War, been considerably supplemented by the provisions of the Treaty of Versailles creating the League of Nations, and by various later agreements arising out of the amendment of the Articles on the Covenant. The convention of July 29, 1899, was an especially epoch-making document, for it represented the agreement of no fewer than twenty-

four states to submit certain disputes to a permanent court of arbitration, an innovation which still further assimilates I. L. to law proper. Provision was also made for international commissions of inquiry on disputes 'arising from a difference of opinion on facts', although as to these last-mentioned bodies it was further provided that their reports should leave entire freedom of action to the parties concerned. Such an inquiry was held in the case of the Dogger Bank outrage on Brit. fishing vessels at the time of the Russo-Japanese war. In the express recognition of arbitration as the most efficacious and equitable means of composing differences, it is to be noted that, although most European powers bound themselves to submit to the arbitration tribunal for a period of five years, there is an express condition, 'qu'ils ne mettent en cause ni les intérêts vitaux, ni l'indépendance ou l'honneur des deux états contractants et qu'ils ne touchent pas aux intérêts des tierces puissances.' This principle finds more definite expression in the Covenant of the League of Nations, where it is limited by considerations of aggression. Thus work of consolidating or codifying the usages of I. L. and creating a tribunal was supplemented by the Declaration of London (*q.v.*), which created an International Prize Court of Appeal and further regulated the law of contraband and blockade.

*The Subjects and General Principles of International Law.*—The subjects or persons of I. L. are normally sovereign and independent states. Sovereignty is a fact depending on nothing else than the objective existence of all the ordinary phenomena of political independence; though such external sovereignty may require recognition by other states to enable the new sovereign state to enter the society of nations. The characteristics or elements of international personality may be summarised thus: 'Every society claiming admission to the law of nations must satisfy the following requirements: (1) It must be represented by a gov. which receives a *de facto* allegiance from its subjects; (2) it must be a sovereign independent state, though it is not necessary that there should be complete independence (see Lord Finlay in *Duff Development Co. v. Kelantan Gov.* (1921), A.C. 797); (3) it must exhibit reasonable promise of durability (internal instability was one reason for delay in the recognition of the U.S.S.R. or Soviet Russia); (4) it must possess definite territory; and (5) it must be recognised as a member of 'the family of nations.' In the theory of I. L. a state under suzerainty is no different from an individual state in a federal system, its subjects being in effect those of the suzerain state. A protectorate occupies an anomalous position midway between an independent sovereign state and a state under suzerainty, for it remains independent and owes no allegiance to its protector, although a part of its rights have been surrendered either temporarily or permanently.

As consequence of the First World War certain territories ceased to be under the

sovereignty of the defeated states and were *mandated* to various powers. The mandatory representation marked a new and progressive principle in I. L. The question of the sovereignty of the mandated ter. raised juristic difficulties; for it might lie in the League of Nations, in the mandatory state, or in the mandated ter. Class 'A' *mandated* ter., however, appeared to be largely assimilated to protected states; but 'B' (e.g. Tanganyika Territory) and 'C' (e.g. South West Africa) ters. would appear to await appropriate juristic definition. (See further *MANDATES*; and also *IRAQ*; *PALISTINE*; *SYRIA*.) Again, the self-governing dominions of the Brit. Empire occupy, in I. L., a position difficult to define. Before the First World War they had traces of individuality or 'international personality,' in that they had their own colour, their own flag in the shape of a modified Brit. ensign, and they had the right to make treaties independently with foreign states on minor matters like tariffs. The effect of the First World War was to emphasise these previously tentative steps towards international personality; for the Dominions secured separate representation at the Peace Conference in 1919, and became original members of the League of Nations, with separate representation on the League Assembly; while Canada, in 1921, was given the right to accredit to the U.S.A. a representative who was to be appointed by the king on the advice of the Canadian gov., and whose duties were to deal with questions between the crown and the U.S.A. affecting Canada. Also Ere more than ten years ago had a Minister Plenipotentiary to represent Free State interests in Washington. Today the sev. dominions exchange representatives with a number of foreign govts. (As to the relations *inter se* of the members of the Brit. Commonwealth of Nations, see under *IMPERIAL CONFERENCE*; *INTER-IMPERIAL RELATIONS REPORT*.)

Some encroachment on sovereignty seems to be implicit in the right of intervention. The question of peaceful intervention has been brought into prominence by the rights possessed by the League of Nations under the Covenant (q.v.) and under treaties containing Minority Clauses. Jurists do not concur on the precise scope of the right of intervention; but the tendency of opinion prior to 1938 was towards agreement on the basis of the grounds mentioned in Articles 11 and 15 (6) of the Covenant, the net effect being that the Great Powers of Europe would no longer claim under treaties the right to intervene in the affairs of other European states while there existed in the League of Nations a means to that end. But in 1938 and the immediately succeeding years, the totalitarian technique, as developed by Germany and Italy, reversed this tendency completely and without intervention but invasion without ultimatum became so common that the entire structure of I. L. was threatened.

*League of Nations.*—The League, called into being on the ratification, in 1920, of the treaty of Versailles, and by the pro-

visions of that treaty, was by no means novel in its conception. But it was a novel subject of I. L., for it aimed (vainly, as the Second World War proved) through the Covenant, at the promotion of international co-operation and maintenance of international peace (see *LEAGUE OF NATIONS*).

I. L. recognises the right of any state to place itself under any form of gov. it may choose, and to regulate its domestic concerns as it will. Again, a state may pursue any commercial or fiscal policy and maintain what armaments it may choose without thereby infringing any rule of I. L., and its judicial tribunals may assert exclusive authority over all persons and things within the ambit of their jurisdiction, whether such persons and things are foreign or not. But in a case of conflict of legal principles in regard to the rights of private individuals, the dictates of international comity may be said to have occasioned the habitual application of the appropriate law to each case (see *COMITY*). This application of foreign law is sometimes called *Private I. L.*; but strictly the word 'international' is inapplicable, and the rules and principles relative to the subject will not therefore be further referred to in this article.

It is also an underlying principle of I. L. that whether an independent nation be strong or weak does not affect its right to equality of treatment and respect in all matters directly or indirectly concerning its interests. Included in the ter. of a state are the so-called territorial waters extending for 3 m. out, measuring from low-water mark. It follows also from the general freedom of the high seas that men-of-war and other public vessels on the high seas are essentially and in every point treated as though they were floating parts of their home state. Included in such national parts of foreign ter. are the official residences of diplomatic envoys and ambass. A movement for the recognition of free navigation on international rivers set in at the beginning of the nineteenth century and developed in the case of a number of great European rivers in conventions between the various riparian states concerned. By the stipulations of the Congo Conference at Berlin in 1884-85, the Congo and the Niger are free, and there is a special international commission called the International Congo Commission to regulate navigation on those rivers.

The detail of I. L. relates to belligerency, or the rights and duties of states in time of war, neutrality, and the process of the pacific settlement of international disputes by arbitration. In regard to belligerency I. L. lays down rules for the commencement of hostilities, and for determining 'enemy character,' whether of goods, ships, or persons (see *ENEMY*); it prescribes the permissible modes of warfare, and provides for the proper treatment of prisoners of war and wounded belligerents, though, in this connection, the policy of 'frightfulness' habitually adopted by the Germans has involved in its application the abrogation of these rules (see also *DEPORTATIONS*, *SUBMARINE WAR*).

FARE, AERIAL WARFARE). Further, it lays down restrictions on the conversion of merchant into war vessels on the high seas, interprets the effect of conquest upon liabilities, and the general operation of treaties, and regularises the practice of pacific blockade. The rights and duties of neutral powers find expression in the rules as to contraband (see DECLARATION OF LONDON), the supply of arms by neutral states, the right of asylum, passage through neutral ter., blockade, and the visit and search of neutral merchantmen. As to what acts on the parts of its subjects a neutral gov. is bound to restrain and what acts its subjects may do at their peril, the *Alabama* case showed that there was no clear principle before the award of 1907 as to whether a gov. might acquiesce in the preparation and sale of an armed vessel: the analogy to the principle upon which a gov. incurs no legal responsibility for the supply of guns being very close. Now neutral govts. must use due diligence to prevent the arming or equipment of such vessels within their jurisdiction.

**International Law and War Crimes.**—The critics of the Nuremberg judgment of 1946 allege that there is no precedent for establishing the crimes with which the prisoners were tried and imposing the punishment. But the crimes and atrocities committed by the Axis Powers were beyond anything in hist. in regard to both their range and their enormity. They were international in character and therefore to be judged according to the rules of I. L. The killings charged at Nuremberg were killings which the Tribunal held could not be justified under I. L., that is the laws or customs of war. The killing of hostages, the murder of prisoners of war, the extermination of Jews and others, the slaughter of millions in concentration camps (*q.v.*) and in occupied countries by manifold means, were all accomplished in flat breach of the Hague and Geneva Conventions. These are Conventions which had been solemnly agreed by all the assembled nations, including the Axis Powers, for the amelioration as far as possible of the horrors of war. None of the prisoners at the Nuremberg trial received the death sentence unless he was found guilty of murder, that is on the counts of war crimes (see CRIMES, WAR) or crimes against humanity, and the modern laws and customs of war—the validity of which cannot be doubted for they date back to Grotius and even earlier. What was to some extent novel was that the heads of the Hitler Inner Council were individually indicted and punished for initiating and waging a war of aggression. But those who aver that there is no law against aggressive war ignore the existence of I. L. Since 1919 at least the nations have deliberately sought to outlaw war. Their final pronouncement was the pact of Paris, the Kellogg-Briand Pact of 1928, a most solemn treaty made by sixty-six nations which agreed to renounce war as an instrument of national policy, and the aggressors in the Second World War were among these nations. The Pact was a declaration of I. L. by practically the

whole of the civilised nations and the Gers. were guilty of a breach of that treaty and of I. L. by initiating and waging war. Hitler and his followers were therefore individually principals in the common plan of breaking that international law and, as the Tribunal said, the crime against peace was the most atrocious crime of all; for it let loose the whole mass crimes of slaughter, terrorism, and cruelty. That was the common plan of crime which the Nuremberg Tribunal condemned and for which they punished the individuals responsible. I. L. for international crimes must be found in conventions or treaties like the pact of Paris, which the nations entered into in order to define the I. L. on the point. It was expressly intended to put the matter beyond controversy. The novel and arresting thing is that these declarations were at length put into use. There is thus no ground for describing the decisions of the Nuremberg trial as *ex post facto* law. The trial is a landmark in I. L. It estab. the right of the world to inquire into the acts of military men and into the acts of govts., statesmen, and politicians charged with bringing about a war and with concerted and calculated breaches of treaty and of faith and of the laws of war. See also NUREMBERG TRIAL. See F. Bauer, *Die Kriegsverbrechen vor Gericht*, 1945; R. H. Jackson, *The Case Against the Nazi War Criminals*, 1946; and H.M.S.O., *War Crimes Commission: Law Reports of Trials of War Criminals*, 1948.

For detailed reference to the rights and obligations of states in time of peace see AERIAL NAVIGATION—Aerial Laws; ARBITRATION—International Arbitration; EXTRADITION; EXTRA-TERRITORIALITY; MANDATES; MONROE DOCTRINE; PROTECTORATE; SOVEREIGNTY; etc.; for detailed reference to belligerency or the rights and duties of states in time of war, see BELLIGERENTS, RIGHTS AND DUTIES OF; also AERIAL WARFARE; CAPTIVATIONS; CARTEL; CHEMICAL WARFARE; DECLARATION OF LONDON; DECLARATION OF PARIS; EMBARGO; GUNBOAT WARFARE; PRIVATERS; PRIZE OF WAR; REQUISITIONS; REPRISALS; and for rights and duties of neutral powers see BLOCKADE; CONTRABAND; CONVOY; DECLARATION OF LONDON; NEUTRALITY; VISIT AND SEARCH.

See H. Wheaton, *International Law*, 1836 (5th ed. by C. Phillimore, 1915); W. E. Hall, *International Law*, 1880 (8th ed. by A. P. Higgins, 1924); H. S. Maine, *International Law*, 1888; J. Westlake, *International Law*, 1904–07, and *Collected Papers* (ed. by Prof. Oppenheim) 1914; L. Oppenheim, *International Law*, 1905–06 (3rd ed. by R. F. Roxburgh, 1920, 7th ed. 1948); F. E. Smith (Lord Birkenhead), and N. W. Sibley, *International Law as interpreted during the Russo-Japanese War* (2nd ed.) 1907; F. E. Smith (Lord Birkenhead), *International Law*, 1911 (6th ed. by R. Moelwyn-Hughes, 1927); J. M. Spaight, *Aircraft in War*, 1914; H. R. Pyke, *The Law of Contraband of War*, 1915; E. M. Borchard, *Diplomatic Protection of Citizens abroad*, 1915; J. H. Morgan (trans.) *The German War Book*



tries where they may be needed. The headquarters of the bank are in Basel. Control of the Bank is in the hands of a Board of Directors which is composed of the governors of the founding Central Banks, *ex officio* a corresponding number of persons nominated by them, and the governors of certain other Central Banks selected by the Board. During 1930-4, no Board meetings were held and the Bank confined itself to routine functions. The British directors are Lord Catto and Sir Otto Niemeyer.

**International Telephone and Telegraph Company**, with main offices in New York City, is one of the biggest of its kind in the world. It operates telephone systems in the Argentine, Brazil, Chile, Cuba, Mexico, Porto Rico, and Uruguay. Seventy years ago with the consent of the Spanish government it bought up all the telephonic companies in Spain and installed American machinery and methods. It maintains a telegraph service all over America and this connects with services in the U.S.A. and Europe. It also has a cable between the U.S.A. and South America.

**Internationale**, name given to an international association of Labour and Socialist organisations. Karl Marx with Engels founded the first I in 1864 in London. A second I was established in 1889 after the demise of the first due to divisions between Marx and the Russian Bakunin (q.v.), and in 1912 issued a manifesto calling upon all workers to secure peaceful foreign policies from their governments. Among their associates were Stanning, Britting and Ma Donald, all of whom became prime ministers of their respective countries: Denmark, Sweden and Great Britain. After the First World War meetings were resumed but it was not until 1923 that the Second I was completely re-established. Meanwhile a Third I had been formed at Moscow composed of Communist elements who had been excluded from the Second I. It was officially founded in 1919 by Lenin, who proclaimed its aim to be world revolution and who genuinely believed such a world revolution to be imminent. The various Communist parties of each nation receive direct instructions from the Bureau of the Third (Communist) I. See K. Marx and F. Engels' *Manifesto of the Communists* 1848; N. Bukharin, *Progress of World Revolution* 1920; A. Loynhoe, *Survey of International Affairs*, 1924; J. Price, *The International Labour Movement*, 1931.

**Internationale, L'** communist anthem and national anthem of the Soviet Republic, written by Eugene Pottier in 1871 and set to music by Pierre de Geyter (d. 1934). An English translation of the opening lines runs: 'Arise ye starvelings, from your slumber, Arise, ye prisoners of want! For reason in revolt now thunders And at last ends the age of cant. Now away with all your superstition, Sorville masses arise, arise! We'll change forthwith the old conditions And spurn the dust to win the prize. Then, comrades, come rally And the last fight let us face, L'Internationale Unites the human race.'

**Interplanetary Society, British**, founded in 1933. Its objects are to promote the development of interplanetary travel and exploration by the study of rocket engineering, astronomy and associated sciences. The Society has over 100 fellows and 1 members, including many British and foreign workers prominent in these fields. In 1935 the Society published provisional designs for a lunar spaceship in the light of the information then existing. Further recent papers have dealt with expendable tank ship rockets, atomic propulsion for rockets, and earth satellite stations. The first Honorary Fellow of the Society, elected in 1949, was Prof. Hermann Oberth, noted rocket pioneer, whose studies initiated the great technical achievements by the Germans in the Second World War. The Society is particularly interested in the question of lunar navigation and landing, since these represent the first objectives in interplanetary flight. At present the problem of directing a rocket to the Moon and obtaining information by telemetering and television is no easy practical solution, but investigation of the physiological problems involved before manned rocket flight is possible is still to be undertaken. Also the engineering difficulties involved in building a rocket capable of return journey are immensely more greater than those of a mere one-way trip, it is nevertheless believed that they will be overcome before the end of the present century.

The Society does not itself undertake practical research work in rocket propulsion and allied subjects, this being done by the large government and industrial agencies and research centres now established, in many of its members are employed. Its function is rather to act as the learned society for scientists working in the fields, to hold lectures and publish material concerned with interplanetary flight and to study the consequences, extending far beyond the purely technical sphere of the conquest of space, for interplanetary travel and spaceships. See under **ROCKET**.

**Interpleader**. When a person finds himself in the position of being sued for the recovery of money or goods in his possession in which he claims no interest but to which some third person besides the plaintiff has a claim, he is not compelled either to incur the cost of defending the plaintiff's action or run the risk of an action at the instance of the other claimant by handing over the property to the plaintiff. His proper course is to take out an Interpleader summons under Order LVII (rules of Supreme Court), on the hearing of which the action against him is summarily stopped and the two claimants are made parties to an issue. This is called a stakeholder's Interpleader. The latter case arises when a third person claims goods which have been seized by a sheriff under an execution (q.v.) for a judgment debt. The sheriff's course is to serve an Interpleader summons on both the claimant and the executive creditor, and in the case coming on before the master, an issue will

be directed for trial, unless the amount in dispute is under £50, when he will himself summarily dispose of it. Where the master directs an issue, the claimant must pay money into court to abide the event of the trial; if he declines the master will make an order for sale (if goods) or payment (if money) to satisfy the judgment creditor's claim. See Calabré, *Interpleader*.

**Interpolation**, mathematical process of filling in values intermediate between those given in a set of tables, e.g. the finding of log 2765173 from logarithm tables which give only log 2765100 and log 2765500. In most simple cases like the example given, it is sufficiently accurate to use the method known as the method of proportional parts. Thus the tables give:

log 2765100	6.1117580
log 2765500	6.1117737
∴ a difference of 100 is equivalent to	0.0000157
∴ a difference of 1 is equivalent to	0.0000157
	100
∴ a difference of 73 is equivalent to	0.00000157 × 73
	= 0.0000115 to seven places
∴ log 2765173 =	6.1117695

A very accurate result may sometimes be obtained from a graph by plotting out the series of tabulated values and then joining up the points by means of a curve as smooth and continuous as possible. This method is especially suitable in many physical examples where the resulting graph takes the form of a well-known curve, and also gives as good a result as we can hope to get in such cases as the estimation of the pop. of a country at some date intermediate between two centuries (see *GRAPHICAL METHODS OF REPRESENTATION*). As a rule, so long as the successive differences vary very slowly, a simple method is good enough, but where the differences alter rapidly (as for example the differences for  $1'$  as the tangent of an angle approaching  $90^\circ$ ) another method must be resorted to which involves more advanced mathematical work from the theory of finite differences.

**Interpretation Act.** Act passed in 1889 repealing and re-enacting Brougham's Act of 1850 for shortening the language used in Acts of Parliament. As to Acts passed after 1850 the Interpretation Act provides that words denoting the masculine shall include the feminine, the singular the plural, and that statutory references to the sovereign or crown in Acts of any date shall be construed to refer to the sovereign for the time being in the absence of an apparent contrary intention; and also that where any Act repeals and re-enacts with or without modifications, any provisions of a former Act, references in any other Act to the repealed provisions shall be construed as references to the re-enacted provisions. According to Webster the Brit. dominions by the I. A. of 1889 are forbidden to call themselves colonies.

**Interrex** (Lat. *inter*, between, and *rex*, king), official of auct. Rome, appointed by

the senators on the death of a king to hold the supreme authority in the state during an interregnum, i.e. a vacancy of the throne, or suspension of the usual gov. In auct. Rome an I. was appointed to hold office between the death of a king and the election of his successor. He held power for five days, and had to belong to the patrician party. The first I. appointed named a successor, and sometimes the nomination continued to a third and even a fourth. Thus the fiction of personal selection was kept up, held to be essential to the proper transference of the religious power of king or consul.

**Interrogatories.** In interlocutory proceedings (q.v.) in an action at law, either plaintiff or defendant may apply, as soon as the latter has delivered his statement of defence, to a master in chambers for leave to administer I. to his opponent. Before being allowed to deliver I., a sum proportioned to the length of the I., but in no case under £5, must be paid into the security for costs account by the party delivering the I. The other party must answer the I. within ten days or such other period as may be allowed. The I. before delivery are submitted to the master, who may disallow all or any in his discretion. Only such I. will be permitted as appear to the master necessary for disposing fairly of the case or for saving costs. The object of I. is to obtain admissions from the other party with a view to proving one's own case and to ascertain as far as possible the case of the other party. But it is not, at least in theory, permitted to a litigant to institute a 'roving commission' of inquiry so as to work up a case out of his adversary's forced admissions or to defend a just cause by a similar process. I. must relate strictly to the matters or facts in issue (see *under EVIDENCE*), but, unlike pleadings, are not confined to the material facts upon which the parties intend to rely, for they are generally directed to the evidence. The party interrogating is entitled to ask 'anything that can be fairly said to be material to enable him either to maintain his own case, or to destroy the case of his adversary.' But he cannot ask the names of his opponent's witnesses, nor, indeed, is he entitled to find out on what evidence his opponent proposes to rely to prove his side of the case. In legal slang this is expressed in the prohibition of 'fishing' I. There are sev. forms of objecting to answer I., but generally objections must be by affidavit. The customary objections are on the ground of irrelevancy, that the I. are fishing, that the matter is privileged, and that the contents of a document are asked.

**Inter-State Commerce Commission**, see *COMMERCE COURT*.

**Interval**, in music, is the name for the distance in pitch between two or more musical sounds. The smallest I. used in practical music are semitones which, in a keyboard (but not in a string) instrument, have always the same distance in pitch between them, and it is the number of tones contained in the I. between two notes of different pitch which determines the 'size' of the I. Is are primarily divided

into two classes, consonant and dissonant, but the lines of demarcation between the two have been very differently fixed. The Gks. considered the unison, octave, fifth, and fourth more perfect than the other 19. In medieval treatises 19 were divided into perfect, medium, and imperfect the unison belonging to the first class, the fourth and fifth to the second, and the third and sixth to the last. The division into perfect and imperfect is followed by many writers at the present day. The simplest classification is one used in Germany and is on the following system. 19 are reckoned upwards inclusively and by number of names of notes which they contain. They are in their normal state when reckoned from the first note of the major scale considered, for the time as the 'tonic'. 19 is one semitone less than 'major', 18 is 'minor' and one semitone more than 'major' are augmented while 19 is one semitone less than 'minor' are 'diminished'. See INVERSION.

**Intestacy** denotes the decay of a person without having made a will, or where though a will has been made it has been either revoked or annulled for irregularity. A person so dying is said to have died intestate, and such real property as he may have died possessed of descends ultimately to his heir in law and his personality to the next of kin under the statutes of distribution. See SUCCESSION. **INTESTATE**. See also DISTRIBUTION, STATUTES OF and INHERITANCE.

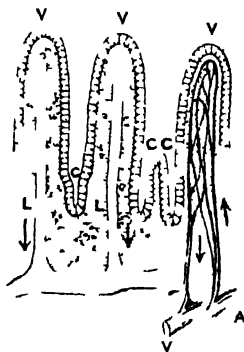
**Intestina**, or **Entozoa** name formerly given to an order composed of worms which live in the intestines of other animals. It included nearly all Metazoa as distinguished from Protozoa but has now no technical significance.

**Intestines**. The term the portion of the alimentary canal between the stomach and the anus (*q. v.*)

The Small I. is a slightly narrowing tube from 22 to 25 ft. long and commences at the pylorus end of the stomach and after many convolutions terminates in the large I. It occupies the lower and middle part of the abdomen (*q. v.*) and is surrounded by the large I. The small I. is arbitrarily divided into three portions, viz the duodenum, jejunum, and ileum. The duodenum, about 10 in. long and from 1½ to 2 in. in diameter, is the shortest and widest part of the small I. It resembles a large C-shaped curve its concavity embracing the head of the pancreas. It is only partly covered by the peritoneum. The middle descending portion of the duodenum receives the common bile duct and pancreatic duct. The jejunum, about 8 to 9 ft. in length and 1½ in. in diameter occupies the upper and left part of the abdomen below the subcostal plane. It joins the duodenal section on the left side of the vertebral column, and is continued into the ileum which is about 12 to 14 ft. in length and 1½ in. in diameter. This portion occupies the lower and right part of the abdomen and is highly convoluted. Both the jejunum and ileum are attached and supported by an extensive fold of the peritoneum (the mesentery). At a point

about 3 ft. from the termination of the ileum a small pouch (Meckel's diverticulum) is occasionally found, and is probably connected with the persistence of a part of the vitelline duct of early fetal life.

**Large Intestine**.—This portion of the alimentary canal is 5 to 6 ft. long and extends from the ileum to the anus. It is divided into three parts, viz the cæcum (with the vermiform appendix), the colon, and the rectum. Its diameter varies from 2½ in. in the cæcum to 1½ in. in the lower part of the colon, diminishing gradually throughout its length with the exception



VERTICAL SECTION THROUGH A FRAGMENT OF THE SMALL INTESTINE

V, V, V, are three villi, each covered by columnar epithelium. C, C, C, are the little tubular glands (crypts of Lieberkühn) between the villi which secrete intestinal juice. L, is the central lacteal which conveys the chyle into the lymphatic vessel with villi in the submucous coat. In the villi on the left the central lacteal is not shown but here the blood vessels are depicted. The capillary network is immediately under the epithelium. It originates from a small artery. A, in I, leads into a small vein. V.

of the well marked dilatation of the rectum referred to later. The cæcum is a blind sac occupying the right iliac fossa immediately behind the anterior wall of the abdomen and extending some 2 or 3 in. below the ileo-cæcal junction. Normally this junction contains the ileo-cæcal or ileo-colic valve, though cases of the absence of this valve have occurred and no inconvenience has been recorded during life. The cæcum is covered by the peritoneum in front, below, and at the sides. From its posterior and left surface the vermiform appendix protrudes and usually is directed upwards and to the left, though it not infrequently hangs down into the true pelvis. Its opening into the cæcum is about 1 in. below that of the ileum. So far as is known, this appendix is peculiar to man, certain of the higher apes, and to



the wombat; but in some animals a peculiar formation of the distal part of the cæcum may represent a condition of the appendix. Its susceptibility to disease has been dealt with elsewhere (see *APPENDIX*). At birth the cæcum is a cone and the appendix is its apex; it is bent upon itself to form a *c*, and this form may persist throughout life. The colon is subdivided into four parts: (a) The ascending colon, a portion of the canal about 8 in. long. It is situated in the right lumbar region and ascends vertically to the under surface of the liver. (b) The transverse colon describes a bow-shaped curve, the arch of the colon, and passes across from the right hypochondrium to the left. It is invested by the general peritonæum, which forms a separate fold for it (the transverse meso-colon). (c) The descending colon is continuous with the previous portion by a sudden bend, the splenic flexure, where is situated a remarkable fold of the peritonæum (costo-colic ligament). It descends vertically for about 6 in. to the left iliac fossa, and is usually empty and contracted, while the rest of the colon is filled with gas. The peritonæum forms a covering to it only at the front and sides. (d) The sigmoid flexure is the narrowest part of the colon. Treves and T. Jones have pointed out the inapplicability of the term 'sigmoid flexure,' and it is now usual to subdivide this portion into the iliac colon and the pelvic colon. The rectum, the lowest portion of the large I., extends to the anus. It bears its name in the human subject as it has a marked concavity forward corresponding to that of the sacrum and coccyx. It is some 8 in. in length and ends in a dilatation (rectal ampulla) which is in contact with the back of the prostate in the male and of the vagina in the female. The peritonæum covers only a portion of the rectum, being reflected down and forming a pouch between the bladder and the rectum in the male, or between the uterus and rectum (pouch of Douglas) in the female.

**Structure and Glands of the Intestines.**—The I. are composed of an external serous or peritoneal coat and three others: muscular, submucous, and mucous. The muscular coat consists of two layers of fibres, a longitudinal and a thicker inner circular set. The progressive contraction of the fibres of the muscular coat produces the peristaltic movement by which the contents of the I. are forced onwards. The sub-mucous coat of strong loose areolar tissue is connected more firmly with the mucous coat than with the muscular coat. The mucous coat is thick and vascular and consists of: (1) An epithelial layer forming the intestinal glands; (2) a layer of retiform tissue which supports the blood vessels and lactenils, and (3) a thin layer of unstriated muscle (muscularis mucosæ). In the duodenum and jejunum the mucous membrane is thrown into a series of closely placed transverse plates (valvule conniventes). The largest are about 2½ in. long and ½ in. wide at the broadest part and they materially increase the absorbent surface to which the food is exposed. The surface of the small I. is velvety, due to the

presence of minute closely-set protuberances termed villi. Two kinds of small secreting glands are found in the I., viz., the crypts of Lieberkühn and Brunner's glands, the latter being peculiar to the duodenum. Throughout the whole length of the intestinal tract are minute masses of lymphoid tissue (solitary glands). They are especially numerous in the cæcum and appendix; in the ileum they are collected into large oval patches known as aggregated glands or Peyer's patches, the long axes of which, ½ in. to 4 in. long, are arranged length-ways in that part of the tube most distant from the mesentery.

**Vessels and Nerves.**—All parts of the I. are supplied with a very complete system of blood and lymphatic vessels (dacteals) minutely sub-divided. The nerves of the I. are chiefly derived from the superior mesenteric plexus and at first they and their subdivs. cling very closely to the larger arterial vessels; finally they reach the I. in very numerous branches to be distributed and redistributed in the muscular and sub-mucous coats. See II. Smith, *Acute Intestinal Obstruction*, 1948.

**Intimation, in music,** the opening phrase of any plain-song melody. The term is usually applied to the first two or three notes of a Gregorian psalm-tone, generally sung by one or more selected choristers, or by the officiating priest. Its use is, as a rule, confined to the first verse of the psalm or canticle, though occasionally in the *Magnificat*, *Benedictus*, and *Venite* the opening phrase of each successive verse is sung in this way to give a greater solemnity.

**Intoning,** custom of rendering prayers in the form of a musical recitative, similar to chanting, the greater part of the prayer being recited on one note. It can, however, be varied by the introduction of certain simple inflections. In cathedrals and larger churches, I. greatly simplifies audible utterance. The practice of I. is undoubtedly of ancient date, and obtaining among the great majority of barbarous nations, as well as in the Græc., Rom., Anglican, and Lutheran churches.

**Intoxication,** see ALCOHOL, ALCOHOLISM, and DRUNKENNESS.

**Intra,** *in* of N. Italy in the prov. of Novara, situated on the W. shore of Lake Maggiore, about 25 m. N.W. by W. of Como. There are ironworks, and manufs. of silk, cotton, and felt. Pop. 7000.

**Introduction** (It. *introduzione*), musical term signifying the preliminary to a following movement. Strictly speaking, it is the piece of music with which an opera opens, and is preceded by the overture, but many composers make it take a more important place, and introduce it in the place of the overture proper. Gounod does this in most of his works, Mozart in *Don Giovanni*, and Meyerbeer in *Robert le Diable*. In a wider sense, the introduction is the prelude to a symphony, rondo, waltz, etc. Beethoven made use of it in sev. of his symphonies, quartets, and overtures, such as in his *Egmont*, and in *Learners*, Nos. 2 and 3. The majority of Wagner's operas also begin with an

introduction, and a short one is often prefaced to the second and third acts as well.

**Introit**, part of a psalm, with antiphon and gloria sung in the Rom. Catholic Church at the beginning of the Mass, as soon as the priest begins the introductory prayers. Other passages of Scripture are sometimes used. The introduction of 1s. is ascribed to either Celestine (123) or to Gregory the Great (590). Some of the 1s. in the present misal are taken from uninspired writers.

**Intromission**, in Scots law, the assuming possession of the property of another either on legal grounds or without authority. I. I. the latter case is contradistinguished as vicious. One of the commonest forms of legal I. is that of an adjudger, or creditor, who has obtained an adjudication by process of diligence against his debtor for the payment out of the rents of his debt and interest. See Bell's *Comment.*

**Intrusive Dyke Rocks**, see under **IGNOUS ROCKS**.

**Intuition**, in philosophy, a term signifying the mental faculty of spontaneous knowledge of the truth as opposed to its discovery by any ratiocinative process. The concept and word are taken from the terminology of medieval scholasticism. In particular, I. in scholastic theology meant a knowledge of God in the beatific vision. The term 'intuition,' as used later in the science of ethics, is of the first importance in that it denotes a school of thought diametrically opposed to the utilitarian. The intuitionists define the principles and method upon which are to be determined right rules of conduct by reference to a supposed moral sense, or, in other words, duty is to be measured by certain fundamental axioms or intuitively known principles of moral reasoning. The utilitarians, on the other hand, adopt no such subjective standard of good conduct, but estimate the moral value of an act by reference to an objective standard of human duties, whether utility, general happiness (universalist hedonism), or individual happiness (egoistic hedonism). The authority of the conscience or moral sense as opposed to what may generically be termed the social affections was first advanced, among Eng. philosophers, in a distinct form by Butler in his *Dissertation on Virtue*, 1739, and carried further by Reid in the *Essays on the Active Powers of the Human Mind*, 1788. Reid insists on the essential difference between self-love, or regard for one's own good, and sense of duty, or conscience, where Butler seems to have leaned to a belief in their identity in a future life. Whewell in *Elements of Morality*, 1845 endeavours to formulate a list of intuitive principles exclusive of all regard for happiness and referable to the sole governing principle of conduct, the moral reason. These 1s. are compendiously defined as the principles of benevolence, justice and truth, purity and order. The introduction into the system of the term 'reason,' which, as we have seen, is directly antithetical to the primary notion of I., connotes merely the supremacy of reason over purely non-rational impulses

or instincts (*q.v.*) Kant's use of the word *Anschauung* (literally 'beholding') is practically equivalent to perception, and he gives as instances of true forms of beholding, time and space. But, regarded subjectively, Kant names such 1s. transcendental (unknowable), though objectively they are empirically knowable. See A. J. Balfour, *Defence of Philosophie doulte*, 1920; N. O. Lossky, *L' intuition, la matiere et la vie*, 1928; K. W. Wild, *Intuition*, 1938.

**Inundations**, see **FLOODS AND INUNDATIONS**.

**Intussusception**, or **Invagination**, condition in which one part of the intestine passes into the adjoining portion, telescopically, just as the finger of a glove may on taking it off the hand. The contained portion is nipped and strangled, with the result that all the dangers of hernia (*q.v.*), but in a much more acute form, are present. It is a frequently fatal cause of obstruction of the bowels in children, but is not very common in adults. Surgical treatment is usually imperative. In the early stages a copious enema of oil may restore the normal condition, but the use of purgatives can only make the condition worse.

**Inulin** ( $C_6H_{10}O_5$ ) starch-like substance which is found in dahlia and like tubers, where it forms a reserve food supply. It is coloured yellow by iodine, and is quantitatively hydrolysed to the sugar fructose by dilute acids.

**Invar**, steel alloy, containing 35 per cent of nickel and some manganese. Used for measuring rods and pendulum bars.

**Invasion**. In the theories of the rights conferred by international law (*q.v.*) on invaders it is necessary to distinguish between military occupation and conquest. Occupation may imply no more than the placing of ter, under the authority of a hostile army by way, as it has been expressed, of sequestration, without any intention of appropriating it. Conquest on the other hand, means acquisition. No such distinction was drawn until the middle of the eighteenth century, with the result that the inhabs. of a ter. in the possession of a foreign army were bound not only to swear allegiance to the invader, but to assist him in all respects as if he were the legitimate sovereign. After the Seven Years war juristical writings, notably those of Vattel, began to advance the doctrine that a sovereign does not lose his territorial rights in war until a formal cession at the close of the war by treaty. The prevalent modern theory appears to be that the occupying army merely takes temporary possession for certain purposes, while the sovereignty of the original owner continues for all other purposes. But until recently the practice of belligerent govs. differed from the theory which presupposes that since the invader is invested with no more than a substituted or quasi-sovereignty, the national character of the people and soil remain unchanged. The practice is a corollary of the mere rule of might, that the lives and property of the inhabs. being necessarily at the disposal of the occupant, the inhabs. acknowledged his

sovereignty in consideration of his foregoing the extreme rights vouchsafed by superior force. The question of what acts an occupying army may legitimately do depends on circumstances. The general principle is that everything is prohibited which is not calculated to contribute to success in the military operation concerned.

The articles of the Declaration of Brussels prohibit (1) any compulsion of the pop. of occupied ter. to furnish information about the army of the other belligerent or his means of defence; (2) any pressure on the pop. to take oath of allegiance; (3) confiscation of private property, but without prejudice to the right to confiscate by way of punishment or under stress of military necessity; and (4) pillage; and enjoin (a) the respect of family honours and rights, individual lives and private property, together with religious convictions and liberty, and (b) the general duty of taking all steps to re-establish, and ensure, as far as possible, public order and safety, while respecting, unless absolutely prevented, the laws in force in the country (for full information on these points, see Lord Birkenhead's *International Law*). The rights of conquest are, of course, much wider. Birkenhead defines conquest as the permanent absorption of all or part of the ter. of a defeated enemy, but lays it down that a title by conquest is only complete if the conqueror has the material strength to make his conquest good and has exhibited the intention of appropriation. The effect of the Nuremberg Trial, which followed the Second World War, is to give a new juristic conception of I. when all the circumstances estab. that it constitutes the initiating and waging a war of aggression. If this be proved, the invader has no rights at all in international law but, on the contrary, both individuals and bodies responsible for launching such an I. may be tried on the capital charge. See **CRIMES, WAR**; **INTERNATIONAL LAW—INTERNATIONAL LAW AND War Crimes**; **NUREMBERG TRIAL**.

**Invention**, see **PATENTS**.

**Inventions Board**, see under **FISHER OF KILVERSTONE**.

**Inventory and Inventory Duty**. An I. in regard to the administration of the estates of deceased persons is a list or schedule in which are enumerated all the articles comprising the personal property of the deceased. It also denotes a detailed descriptive list of the assets of a bankrupt, and the property comprised in the schedule to a bill of sale on personal effects. The duty of making an I. of a deceased's effects falls upon the executor or administrator, who should make it in the presence of at least two of the creditors of the deceased or next of kin, or any two credible persons, and it should describe the articles serially, with the value at which each has been appraised, especially as it may afterwards be admitted as evidence to show what is due to the beneficiaries or creditors. But to be admissible as evidence it should on completion be signed and sworn before a commissioner

for oaths. It may be noted that any person interested in the estate may call upon the executor or administrator to exhibit an I., and to render an account of his administration. In Scots law the term I., besides the above applications, is used to denote the schedule made by an heir of the heritable estate of his ancestor with the object of limiting his liability for his ancestor's debts to the amount of the value of the estate so inventoried.

**Inveraray**, cap. of Argyll, Scotland, and altoval bor., 15 m. N.N.W. of Greenock, on Loch Fyne. Inveraray Castle, the chief seat of the duke of Argyll, lies N.W. of the tn. It was built in 1744 as the seat of the Argyll family, the head of the Campbell clan, and rebuilt in 1880. Pop. 450.

**Inverbervie**, seaport of Kincardineshire, Scotland, 13 m. N.E. of Montrose. Pop. 2000.

**Invercargill**, Cap. city of Southland Prov., New Zealand. Area 5911 ac. including 516 ac. of gardens and reserves. Centre of rich arable, and pastoral dist. The city is well laid out with good buildings, and picturesque suburbs with fine homes and well-kept gardens. The chief industries are frozen meat, wool, butter and cheese, flour-mills, timber, and coal. There are excellent sporting facilities. I. is at the gateway to the wonderful National Park and Fiordland area. The port of I. is at Bluff, 17 m. distant, and handles a large export trade. Pop. 29,000.

**Inverclyde**, **Sir John Burns**, first Baron (1829-1901), ship owner, elder son of Sir G. Burns, and eventually succeeded his father in the management of the Cunard Steamship Company. In 1840, on its conversion into a limited liability company, he was appointed chairman. In 1897 he was raised to the peerage as first Baron Inverclyde. His pubs. include: *Something about the Cunard Line*, *The Adaptation of Merchant Steamships for War Purposes*, *Glimpses of Glasgow Low Life*, and *Wild Night*, etc.

**Inverell**, tn and railway station of New S. Wales, Australia. It is situated in Cough co., 280 m. N. of Sydney. Silver, tin, and diamonds are mined in the neighbourhood, and vines are cultivated. Pop. 1800.

**Inveresk**, par. and vil. of Edinburgh, Scotland, situated on the firth of Forth. Mann's. paper. The battle of Pinkie (1577) was fought in the par. Pop. 21,000.

**Invergordon**, bor. and watering-place of Ross-shire, Scotland, situated on Cromarty Firth, with a trade in farm stock and dairy produce. There are dockyards and a pier. I. castle is one m. to the N.W. Pop. 1500.

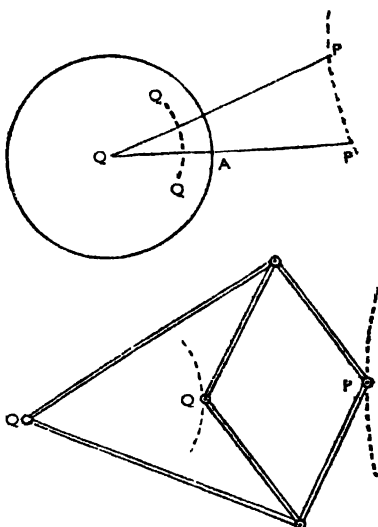
**Inverkeithing**, par. and municipal bor. of Scotland in Fife co., on the firth of Forth, 10 m. from Edinburgh. It forms one of the Dunfermline dist. parl. bors. Has a good harbour and shipbuilding yard, and there are mills, tanneries, and brickworks. Pop. 3400.

**Inverlochry**, ruined castle in Inverness-shire, Scotland, on the R. Lochy, 1½ m. N.E. of Port William. The scene of the defeat of Argyll by Montrose in 1645.

**Inverness**, municipal bor. and seaport, and co. tn. of Inverness-shire, Scotland, situated at the mouth of the R. Ness at the junction of the Beaully and Moray Firths, 108 m. W.N.W. of Aberdeen. On account of its beautiful environment and fine buildings, it is the headquarters of an immense tourist traffic throughout the summer. The chief buildings of note are the cathedral, royal academy, and co.-hall, and it has a fine suspension bridge, and the famous Clach-na-Cudain, regarded as the tn. palladium. Railway repair works, shipbuilding, iron-founding, distilling, and the manuf. of woollen goods are the prin. industries, and the tn. has good roads and a fine harbour and docks. The open spaces of the tn. include Victoria Park, and the famous ground where the most important athletic event of Scotland, the N. Meeting, is held towards the end of Sept. It is a tn. of great antiquity, having been one of the Pictish caps. Pop. 24,000.

**Inverness-shire**, co. in the Highlands of Scotland, stretching from the Moray Firth to the Atlantic Ocean. It is the largest co. in Scotland, and includes sev. of the Outer and Inner Hebrides. Covers an area of 4211 sq. m. For the most part it is wild and mountainous, and characterised by the most impressive scenery. Sev. of the mts. exceed 3000 ft. in height, and Ben Nevis, the highest mt. in the Brit. Isles, reaches an altitude of 4106 ft. There are a few fertile tracts in some of the glens and by the shores of the sea lochs, and in the N. on both sides of the R. Ness. About 5½ per cent. of the shire is cultivated, and sheep-farming is extensively carried on. Herring-fishing is also an important industry on the W. coast. The chief branches of industry are rope-making, shipbuilding, tanning, distilling, brewing, etc. The three great rivs. of I. are the Spey, Ness, and Beaully, and the number of lakes and hill tarns is great, Loch Ness being the most beautiful and best known of the larger lakes. The co., with Cromarty and Ross, returns three members to Parliament. Pop. 84,200. See J. Cameron-Lees, *History of the County of Inverness*, 1897.

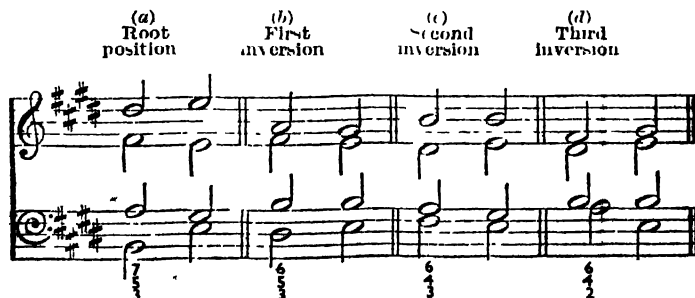
**Inversion**. If P and Q are two points, such that the rectangle OPOQ = the square on radius OA, then Q is said to be



O, fixed centre; P, Moves along given curve;  
Q, tracing point.

the inverse of P with respect to the given circle. If P moves along a given curve, the process of finding the locus of Q (the inverse curve) is called inversion. A simple hinged framework of freely jointed rods affords a mechanical construction for the inverse curve. In more advanced work curves are often inverted with respect to conic sections.

**Inversion**, in music, a term applied to chords and intervals when the relative position of the component notes is changed. Perfect intervals remain perfect when inverted, but major, minor, diminished are reversed by I, major becomes minor, augmented



THE INVERSION OF THE CHORD OF THE DOMINANT SEVENTH

become diminished, and *vice versa* in all cases.

**Invertebrates**, collective term for all those animals which agree in not possessing that combination of attributes which make a vertebrate, but have a dorsal nerve chord, a notochord, gill-slits on the pharynx, a ventral heart, and eyes which are out-growths of the central nervous system. The chief groups of I. are Protozoa (uni-cellular) and the Metazoa (multi-cellular), further divided into Porifera, or sponges; Ctenophora, unsegmented worms; Annelids, or segmented worms; Echinoderms; Anthropoda, including Crustacea, Insecta, and Arachnida; Mollusca.

**Invertebrate Embryology**, see under EMBRYOLOGY; PROTOZOA.

**Invert Sugar**, equimolecular mixture of dextrose and levulose (*D*-glucose, and *L*-fructo-*s*), obtained by hydrolysing cane sugar with dilute acids. It readily ferments, and is used in the preparation of sparkling wines.

**Inverurie**, municipal burgh of Aberdeenshire, Scotland, 16½ m. N.W. of Aberdeen, at the confluence of the Urie and Don. It forms one of the Elgin group of parli. burghs. Pop. 900.

**Investiture**, in eccl. and eccl. hist., the act of giving possession of a manor, office, or benefice, accompanied by a certain ceremonial such as the delivery of a cload, a banner, more or less designed to signify the power or authority which it is intended to convey. Temporal sovereigns claimed the right of investing the bishops with their sees by the formal presentation to them of the ring and crozier, a claim which led to the famous 'Investiture Dispute' between Henry I. and Anselm in England, and to the bitter struggle between the pope and the emperors of Germany in the eleventh and twelfth centuries. At the Diet of Worms (1122), it was finally decided that the emperor should confer I. by a touch of the sceptre only, thus making no claims to confer spiritual power but merely the temporalities of the see.

'**Invincible**,' Brit. battle-cruiser (17,250 tons) carrying eight 12-in. guns, which could be dired broad-side to right or left. She was a unit of Adm. Sturdee's squadron which defeated Von Spee's at the Battle of Falkland Is. (*q.v.*), in which she suffered no casualties. The I. was sunk at the Battle of Jutland (*q.v.*) where she belonged to Adm. Hood's squadron.

**Invincibles** (Lat. *in*, not, and *vincibilis*, conquerable), members of an Irish secret society, composed of assassins and the worst of the Fenian associations. The main object of the society was the assassination of officials. The chief member was known as No. 1, and each was acquainted with but two others—the member by whom he was nominated, and the one whom he in turn nominated.

**Involute and Evolute**, see CURVE.

**Involution**, mathematical process of raising a quantity to any power. Its inverse process is evolution, the finding of a root. Whereas a quantity has one square, one cube, and generally one *n*th power, it

has two square roots, three cube roots, and generally *n* *n*th roots. In algebra, expressions of one term only are dealt with in indices (see INDEX). For expressions of two or more terms, the binomial theorem and multinomial theorem give formulae. In higher geometry the name I. is given to a series of pairs of points on a line, any pair of which  $P, P'$  are connected by a relation  $OP \cdot OP' = k^2$ , where  $O$  is the centre and  $k$  the radius of the I. If  $D_1$  and  $D_2$  are points given by the relation  $OD_1^2 - OD_2^2 = k^2$ , each corresponds to itself and they are known as the double points of the I. If  $AA', BB', CC'$  be three pairs of corresponding points, the anharmonic ratio of any four, *e.g.* (ABBC'), is equal to the anharmonic ratio of the four corresponding points, viz. (A'B'B'C'). Also (D<sub>1</sub>D<sub>2</sub>PP') form an harmonic range. I. ranges are of two kinds—overlapping, where the radius and the double points are imaginary and  $O$  lies between each pair of corresponding points, and non-overlapping, where the radius and double points are real, and any two corresponding points are both on the same side of  $O$ .

**Inwood, William** (c. 1771-1813). Eng. architect and surveyor. In 1821 he planned the new galleries for St. John's church, Westminster; in 1832-33 designed, with his second son, the new Westminster Hospital and sev. other London churches. His chief work is St. Pancras New Church (1822), designed after Gk. models by him and his eldest son. He pub. *Tables for the Purchasing of Estates, annuities, and compound interest* (1811).

**Io**, in Gk. legend, the daughter of Inachus, the first king of Argos. Under the name of Callithyia Io, she was regarded as the first priestess of Hera. She was loved by Zeus, who, to protect her from the anger of Hera, transformed her into a white heifer (according to some authorities, the transformation was the work of Hera herself). The hundred-eyed Argus was then set to watch her, but Zeus despatched Hermes to kill him, and Io was released. But Hera's wrath pursued her, and tormented by a gad-fly, she wandered all over the earth, till at last she reached Egypt, where she was restored to her original form and became the mother of Epaphus. Eschylus gives a different version of this myth in his *Prometheus*. See H. Engelman, *The Ione*, 1868.

**Iodic Acid** (HIIO), white crystalline solid, obtained by the oxidation of iodine with concentrated nitric acid. On gentle heating it loses water and becomes converted into iodine pentoxide, which on further heating breaks up into its elements. I. A. is acid to litmus, forming salts, the iodates of which sodium iodate occurring in caliche (Chile salt-petre), is the prin. I. A. is a strong oxidising agent, readily giving up its oxygen with the liberation of iodine.

**Iodine**, (symbol I, atomic number 53, atomic weight 127), non-metallic element which belongs to the halogen group (*q.v.*). It occurs as iodide in sea-water from which it is collected by certain seaweeds, notably *Laminaria digitata* and *L.*

*stenophylla*, which contain as much as 0.5 per cent. It is also present in crude Chile saltpetre as sodium iodide.

**Extraction from Sea weed**—The weed is burnt in pits and the ash or *celp* boiled up with water and the solutions concentrated. The less soluble salts separate on cooling whilst the iodide remains in solution. The liquor is then distilled with sulphuric acid and manganese dioxide the *I* which is evolved being collected in cooled earthen ware jars.

**Extraction from Caliche**—The mother liquors from which the sodium nitrate has been separated as far as possible are treated with a solution of sodium hydrogensulphate which precipitates the *I* as a black muddy substance which is purified by sublimation. When pure *I* is a greyish black crystalline substance with a metallic lustre and peculiar odour. It has a sp. gr. of 4.0 and melts under pressure at 111° C. On heating it sublimes, giving rise to a purple vapour. It is only sparingly soluble in water, more freely in alcohol, and especially in potassium iodide solution, forming brown solutions. In carbon disulphide and chloroform the solution is purple. With starch *I* forms an intense blue coloration and by means of this test one part of *I* in a million parts of water may be detected. Chemically *I* is the least active of the halogens but nevertheless combines directly with many metals phosphorus etc. and also to a certain extent with hydrogen to form hydrogen iodide. Medicinally *I* and its compounds are of great importance. Its solution in alcohol (tincture of *I*) is used externally for subduing inflammation. The iodides of mercury, iron, and especially potassium are used to increase the activity of the absorbent system generally and in certain forms of chronic rheumatism, in scrofulous affections, mercury and lead poisoning, etc. Compounds of *I*, such as iodoform (*q.v.*) and allied substances, are largely used as antiseptics, silver iodide in the making of photographic plates, and large quantities of *I* and its compounds are of use in technical chemistry. In the form of a complex compound known as thyroxin, *I* is present in the thyroid gland. Deficiency of *I* in the diet causes enlargement of the general health and appears to be associated with goitre. It is a common modern practice to use table salt to which small quantities of iodides have been added, though in most countries sufficient iodine for the general requirements of the body is present in normal diet. In a few cases iodides are introduced into the public water supply.

**Iodoform, or Tri-iodomethane (CHI<sub>3</sub>)**, pale yellow crystalline substance melting at 119° C. and having a peculiar smell. It is best prepared by adding slight excess of a dilute solution of sodium hypochlorite to a solution of 50 parts potassium iodide, 6 parts acetone, and 2 parts sodium hydroxide dissolved in 1,000 parts water. Commercially it is frequently made by an electrolytic method, in which a direct electric current is passed through a warm solution of sodium carbonate, potassium iodide, and alcohol. *I* is slightly soluble

in water and has strong antiseptic properties. It differs from chloroform (*q.v.*) only in having iodine in place of chlorine and in the form of vapour acts as an anæsthetic.

**Iodole, or Tetriodopyrrol (C<sub>4</sub>I<sub>4</sub>H<sub>3</sub>N)**, yellow crystalline substance melting at 110° C. which is used as an antiseptic in place of iodoform. It is equally effective but devoid of odour.

**Iola**, city of Kansas, U.S.A. seat of Allen Co., on the R. Neosho 80 m. S.E. of Topeka. The riv. furnishes considerable water power and the town possesses an extensive medicinal mineral well. Pop. 7,200.

**Iolaus**, in Greek mythology, half brother and charioteer of Hercules, with whom he was worshipped as hero at Thebes. He aided Hercules to destroy the Lernaean hydra and helped Hercules' children in their contest with Eurytheus when the latter made war on them.

**Ion**, (1) legendary ancestor of the Ionian branch of the Greek race brought up in Apollo's temple at Delphi. Euripides takes the story as the theme of one of his tragedies. (2) Greek poet of Chios, living in the reign of Pericles and one of the lesser of Attic tragedians. He flourished at Athens between 480 and 422 B.C. His first tragedy was produced between 482 and 449 B.C., and he subsequently gained both the tragic and dithyrambic prize. He is also the reputed author of a philosophical treatise in the same number three and is credited with various epigrams, poems, elegies, encomia and comedies. He also wrote five historical or biographical works, including an account of the antiquities of Chios. See 1. Allegre *De l'ion Chio*, 1890.

**Iona**, or **Icolmkill**, one of the is. of the Inner Hebrides, Argyllshire, Scotland, separated from Mull by the Sound of I. It is about 4 m. long and 1½ m. broad, and covers a total area of about 2,000 ac. 600 of which are under cultivation, oats, potatoes and barley forming the chief crops. The coast is fairly level on the E., but rocky on the W. The inhabitants support their lives by agriculture and fishing. *I* is celebrated in hist. from its connection with Saint Columba, who about 637 A.D. came here and founded a monastery which became very famous. Later the is. was made the seat of a bishop. Its most curious feature of interest the most noted being St. Oran's Chapel attached to which is a burying ground containing the tombs of Scottish kings before Malcolm Canmore and four Irish and eight Norwegian kings. There is also the cathedral church of St. Mary. In 1905, it was restored and opened for public service by the Church of Scotland and the I. Community has since restored the monastic buildings. Pop. 200. See A and I. Ritchie *Iona Past and Present*, 1930. Lucy Mearns, *St. Columba of Iona*, 1949.

**Ionia**, city of Michigan, United States, and the cap. of Ionia Co. It is situated on the Grand R., 34 m. E. of Grand Rapids. Pop. 7,000.

**Ionia**, in ancient geography, the littoral district and is. of W. Asia Minor, adjoining the Aegean Sea. It was inhabited by Ion-

migrants from the Peloponnesus, and derived its name from the Ionians, one of the anct. tribes of Greece. The country was very flourishing, and out of it arose twelve great cities; Miletus, Myus, Priene, Ephesus, Colophon, Lebedus, Teos, Erythrae, Clazomenae, and Phocaea, together with Samos and Chios, which formed a league more of a sacred than political character. It held a periodic festival in the shrine of Panionium on Mt. Mycale near Priene, when religious worship was observed and games celebrated. Subsequently Smyrna was admitted to the league. The cities gradually fell under the sway of Lydia, but about 550 B.C. became subject to Persia. They became the independent allies of Greece after the Gk. defeat of Persia in 479, but in 387 with other Gk. cities again became subject to Persia. They were finally subdued by Alexander the Great after the fall of Miletus (334). I. was included in the Rom. empire after 64 B.C. It was later invaded by Turks and became part of the Turkish empire.

**Ionian Islands**, chain of is. extending along the W. and S. coasts of Greece, and comprising Cephalonia, Corfu, Cythra (Cerigo), Ithaca, Paxos, Santa Maura, and Zante, with several other dependencies. Total area 1100 sq. m. All the is. except Corcyra were included in the later Rom. empire; Corfu and Cephalonia were captured by Robert Guiscard (1081); in 1101 Corfu fell into the hands of the Venetians, who extended their sway over the is. but finally ceded them to France (1797). After coming under the influence of Russia and Turkey they accepted Brit. protectorate (1809-15), which continued to have influence over them until 1861, when they were annexed to Greece under King George. Pop. 260,000.

**Ionian School of Philosophy**, which fl. during the sixth and fifth centuries B.C., was chiefly interested in the primordial constitutive principle of the universe. The first of them was Thales, his chief successors being Anaximander and Anaximenes. The earlier philosophers sought to explain the material universe in terms of matter and force, finding material substance in everything that exists. About the time of Heraclitus a new thought sprang up. Anaxagoras asserted that everything existed from the beginning in an infinite number of infinitesimal atoms which were the seeds of all things which have since been produced. Diogenes of Apollonia elaborated on the universal homogeneity of nature, the universal substance of all things being air. The later Ionians, Archelaus and Hippo, reverted to the earlier thought of Thales.

**Ionian Sea**, in the Mediterranean, lies S. of the Adriatic and divides Italy from Greece.

**Ionie Dialect**, was one of the four varieties of Gk. language. It was principally spoken in the Ionian colonies of Asia Minor, but was not uncommon in some of the is. of the Aegean Sea. Out of the old Ionic arose the language of epic poetry. Herodotus distinguished four varieties of the New Ionic, in one of which

he wrote. The I. D. is not very different from Attic, but has a richer vowel-system which gives it a certain softness of sound.

**Ionie Order of Architecture**, see ARCHITECTURE—Greece.

**Ionidium**, genus of violaceous plants, inhabits tropical and sub-tropical countries, especially America. Sev. species are used medicinally on account of their emetic roots; the chief of these is *I. Ipecacuanha*, known as the white Ipecacuanha to distinguish it from the true Ipecacuanha of Brazil.

**Ionone** (C<sub>11</sub>H<sub>16</sub>O), ketone of the terpene series. It has a fine odour of violets and is used for the production of the artificial perfume.

**Ions**, in science the electrically charged particles present in solutions of electrolytes, or in gases subjected to electrical discharges. The term was introduced by Faraday, adopting a suggestion of Whewell. See ELECTRICITY, DISSOCIATION.

**Iorga, Neculai**, see JORCA, NICOLAE. **Ios**, one of the Cyclades Is. of Greece, with a fine port. According to tradition Homer was buried here. Pop. 2000.

**I O U** is, without additional words, an acknowledgement of debt. It differs from a promissory note in that it requires no stamp; and it need not be addressed to the creditor by name. Far from being a negotiable instrument like a bill of exchange or promissory note, an I O U is merely evidence of an account stated between the parties to it; but it is not evidence of money lent by the person who signs it.

**Iowa**, N.-central state of the U.S.A., popularly known as the 'Hawkeye State,' covering an area of 36,280 sq. m., 55,986 being land surface. Bounded on the N. by Minnesota; on the S. by Missouri; on the E. by Wisconsin and Illinois; and on the W. by Nebraska and S. Dakota. The surface is undulating, nearly four-fifths comprising rich prairies, forming good pasturage. The soil is generally fertile, the chief crops being Indian corn, hay, oats, wheat, barley, and potatoes. Linseed and sorghum are of importance commercially. Among the fruits are apples, cherries, grapes, plums, and strawberries; beetroot is cultivated for sugar. The state is the richest in arable land in the Union, and about one-eighth is composed of natural forest—oak, walnut, hickory, pine, cedar, elm, maple, and cotton-wood. In the E. portion of the state minerals abound, including coal, lead, zinc, iron, limestone, gypsum, clay, sandstone, and gravel. The leading industry is meat-packing; while dairy produce, including butter, cheese, and condensed milk, is of great value. Flour-milling and the manufacture of farm implements are important, and wool is a valuable commodity. All the rivers are direct or indirect tribs. of the Missouri or Mississippi, but only a few are navigable; there are sev. small lakes in the state. The climate is one of great extremes of heat and cold, generally with a dry winter and a wet summer. There are no very great cities. The negro pop. forms a very small percentage and the

foreign-born peoples are mainly of Ger. or Scandinavian origin. Iowa was formerly populated by Indians, but in 1788 the Fr. came to Dubuque to work the lead mines there; they later claimed the state, which was purchased in 1803, settled by a white pop. in 1832, and organised as Iowa Ter. in 1838. It was admitted to the Union as a state in 1846. It is divided into ninety-nine co., and the cap. is Des Moines, 159,800, other important tns. are: Sioux City, 83,000; Davenport, 66,000; Cedar Rapids, 62,000; Waterloo, 52,000; Dubuque, 41,000; Council Bluffs, 42,000; Ottumwa, 32,000; Mason City, 27,000; Clinton, 27,000; Burlington, 26,000; Fort Dodge, 23,000; Marshalltown, 20,000. The pop. in 1910 was 2,538,268 (negro 16,694). The Governor and the chief officers are chosen for a term of two years; legislature consists of a Senate and a House of Representatives. I. sends 2 senators and 8 representatives to Congress. The College of Agriculture at Ames is the finest of its kind in the U.S. It has over 5000 students. There are over 9800 m. of railway line. See J. Brigham, *Iowa*, 1915; I. B. Richman, *Ioway to Iowa*, 1931; Federal Writer's Project, *Iowa: A Guide to the Hawkeye State*, 1938; C. Cole, *Iowa Through the Years*, 1910; W. J. Petersen, *A Reference Guide to Iowa History*, 1912.

**Iowa City**, cap. of Johnson co., Iowa, U.S.A., on the Iowa R., 23 m. from Cedar Rapids. It is the seat of the Iowa State Univ. It has foundries and machine shops. It is a rich farming and stock-breeding dist. Pop. 15,000.

**Iowa River**, rises in Hancock co. in the state of Iowa, and flows in a S.E. direction entering the Mississippi in Louisiana. It is navigable to Iowa City and is about 350 m. in length.

**Iowa, State University of**, co-educational institution founded in 1847, but not opened until 1855, when the gov. moved from Iowa City, and the old capitol became the Univ. headquarters. Many new buildings were added; the Iowa R. flowing at the foot of the campus provides aquatic sports for the students. There are about 6000 students, and the teaching staff is over 500.

**Ipecacuanha**, emetic substance obtained from the roots of sev. S. Amer. plants. The true I. is a species of Rubiaceae known by the various generic names of *Cephaelis*, *Psychotria*, and *Uragoga*, and occurs in damp forests of Brazil. It is a small herbaceous plant with a prostrate stem and an annulated root. In medicine it acts as an emetic and stomachic, aids respiration, and increases perspiration. The white I. is a viscidaceous plant, known botanically as *Ionidium ipecacuanha*; the bastard I. is a species of Asclepiadaceae bearing the name *Asclepias curassavica*. The active principle of true I. is an alkaloid known as emetine, now used in the treatment of amebic dysentery. 'Dover's powder' is I. and opium.

**Ipek** (Pekia, Ped, or Petak), see *Pec*.

**Iphicles**: (1) Son of Amphitryon and Alcmene, and twin brother of Hercules. While the two babies were in a cradle,

Juno sent two serpents to kill Hercules, who strangled them. (2) Was a son of Phylacus and Olynene, whose cattle were famous for their size.

**Iphiorates** (c. 420-318 B.C.), celebrated Athenian general, the son of a shoemaker. He changed the dress and arms of the Athenian soldiers, and introduced the *pellaste* (αι πελταστai), or targeteers. These light troops were originally composed of Thracian mercenaries. He fought in the Corinthian War, and defeated the Spartans in 392. After 371 he assisted his father-in-law, Cotys, king of Thrace, in war against Athens, but was subsequently pardoned, and took joint command of the Social War.

**Iphigenia**, according to Gk. tradition, the daughter of Agamemnon and Clytemnestra. Agamemnon had provoked the goddess Artemis (Diana) by killing her favourite hart. When the Gks. were going to the Trojan war Artemis produced a calm, so that the fleet in Aulis was detained from sailing. The sooth-sayer Calchas advised Agamemnon to sacrifice I. in order to appease the goddess, and Agamemnon ultimately consented. According to one legend she died on the altar; but, according to another, Artemis put a hart or a goat in her place at the last moment, and carried her off to Tauris. There I. became priestess in the temple of Artemis, and saved her brother Orestes with his friend Pylades from being sacrificed to the goddess by fleeing with them to Greece, carrying away the statue of Artemis from the temple. I. was worshipped in Athens and in Sparta, and it is probable that she was really the goddess under another name. See A. Verrill in *Europides the Rationalist*, 189; F. Ernst, *Iphigenia and Andere Essays*, 1933.

**Ipomoea**, genus of Convolvulaceae, consists of about 400 species of herbaceous and shrubby plants growing wild in warm and tropical countries; many are cultivated in milder climates for their showy flowers. *I. Batatas* is the sweet potato; *I. purpurea*, the morning-glory; *I. purga*, the jalap; *I. pandurata*, the wild potato vine.

**Ipsambul**, or Abu-Simbel, ruins in Nubia, Upper Egypt, on the R. Nile. There are two rock temples, which were built by Rameses the Great, in the sides of steep cliffs. They contain numerous statues and sculptures. See *Eufrat*.

**Ipsus**, in anct. geography, was a tn. of Phrygia, in Asia Minor, where in 301 B.C., Antigonus was defeated and killed.

**Ipswich**, municipal co., and parl. bor., and the co. tn. of Suffolk, England, at the head of the Orwell estuary, 69 m. N.E. of London. I. was once a tn. of narrow anct. streets, jettied bath-and-plaster buildings, and storied inns; but is now a tn. of old and new, where Elizabethan oak mingles with fabrications in steel and concrete. Among its antiquarian remains are: the Ancient House, in the Butter Market, now used as a bookshop, the architectural show-place of the tn., reputed to have been built in 1567 by George Copping for Robert Sparrowe, a ballif of I. It has a wealth of oak carving



throughout, with fine oak-panelled rooms and richly decorated ceilings; Christchurch Mansion, built between 1548-50 by Edmund Witherpoll, with extensive rebuilding in the seventeenth and eighteenth centuries; it is now maintained by the Corporation as a museum of domestic antiquities, period furniture, and pictures, some by Gainsborough and Constable; Wolsey's Gateway (1528) in College Street, the only fragment remaining of Wolsey's ambitious plan to found a college in I. as a nursery for his Cardinal College at Oxford, with the aid of revenues derived from the suppression of monasteries; in 1530 work on his great College of St. Mary came to an abrupt end and the buildings were razed to the ground. The centre of the town and of its communal life is the Cornhill. Here are the town hall, general post office, and the banks. The town hall occupies the site of the old Moot Hall and the general post office that of the Shambles or butchers' mart. The Moot Hall was a ramshackle building with an outside stairway to the upper storey and with the stocks in front and the Market Cross on its right. Some of the streets leading into the Cornhill are narrow, but others have been widened. The main thoroughfare comes into the Cornhill and out again and runs by White Horse Hotel. Many of the finest shops are in the Butter Market near the town hall. In High Street to the N. is the Corporation Museum which originated in a museum opened (1817) by a society founded for the encouragement of the study of natural hist. amongst the working classes. It now includes depts. of general and local natural hist., archaeology, and ethnology.

There are sev. fine churches, mostly Perpendicular in style: St. Margaret's, built in the early fifteenth century with simple stone and flint panelled S. porch, embattled clerestory, and oak Tudor hammer beam roof; St. Peter's, near the site of Wolsey's ill-fated college, in Decorated style; like St. Margaret's this church suffered much from the iconoclast Will Dowsing; both also suffered exterior damage from air raids; considerable renovation and extension were carried out in St. Peter's in 1875 under Sir Gilbert Scott; St. Nicholas, with a fourteenth-century nave and aisles of particular interest architecturally. Other churches are St. Mary-le-Tower, the Corporation church in the churchyard of which King John's charter was received in 1199 by the bailiffs and burgesses; the church was almost entirely rebuilt in 1860-70 and all that remains of the sixteenth-century structure is the nave piers and arches; St. Mary-at-the-Quay, built or rebuilt about the middle of the fifteenth century; this church, too, was severely damaged by bombs; St. Lawrence, a lofty church in the Perpendicular style built of flint and brick with an embattled tower and 5 medieval bells. Of the I. inns which, though they have undergone many architectural changes, have yet stood beneath their same signs for over 4 centuries, the most famous is the 'Great White Horse.' A 'White Horse Inn' stood on the same site

in 1518, when it was probably one of the pilgrims' inns. Numerous personages, illustrious or disreputable, have spent a night there, but it was Dickens's disparaging allusions to it in *Pickwick Papers* (Chapter 22) that prompted the Amers. to build a replica of the inn at the World's Fair, Chicago. Other well-known I. inns are: the 'Crown and Anchor' of comparatively recent date; the 'Coach and Horses' first built as a private residence and only becoming an inn in the eighteenth century; the sixteenth-century 'Black Horse'; the 'Golden Lion' in Cornhill; the 'Old Bell', 'Half Moon', 'Golden Pleece'—in the yard of which bull-baiting was a popular pastime, and the 'Neptune', also once a private residence and noted for its carved ceilings and oak-panelled rooms. The first public library of I. was built in 1887. The present Central Library in Northgate Street was built in 1924. It is a noted depository for Suffolk records and has a growing collection of these original sources of social hist. There are also four branch libraries. There are 9 secondary schools situated in the various dists. of the town, 4 each for boys and girls, and the Northgate Grammar Schools. For further education there is a school of technology, the School of Arts and Crafts, the School of Commerce, and Christchurch Evening College. I. School, which has a continuous hist. from 1477 or even earlier, now ranks as an independent public school. Formerly estab. in Blackfriars monastic precincts and elsewhere, the school moved to its present site in 1851; the foundation stone was laid by the Prince Consort. The general hospitals of I. are the E. Suffolk and I. Hospital and the Bor. General Hospital. I. has six public parks in addition to many recreation grounds (182 ac.); Christchurch Park and arboretums, a richly wooded park of 70 ac., purchased by the Corporation in 1891, and containing the Christchurch Mansion Museum; Chantry Park and Mansion (124 ac.) presented in 1927 by Sir Arthur Churchman, Bart. (Lord Woodbridge) and opened by Princess Mary in 1928; Bourne Park (76 ac.) also presented in 1927 and opened by Prince Henry (Duke of Gloucester); Gypsyway Park (15 ac.) opened in 1910; Holy Wells Park and Mansion (61 ac.) also given by Lord Woodbridge and opened in 1936; and Alexandra Park (11 ac.) opened in 1904.

**Industries.**—The industries of I. include large engineering and agric. implement works (especially ploughs, tractors, harrows, threshing machines, and lawnmowers); tobacco; fertilisers; yeast; clothing; artificial silk underwear; boot and shoe manufs.; railway plant; tanneries; printing works; breweries; maltsters and flour mills. Among the industrial products are: electrical products—motors and dynamos; industrial trucks and trolley buses; mobile cranes; excavators; water control equipment; concrete mixing machinery; roller mills; grain dryers; air compressors; structural steel-work; iron and non-ferrous castings; beet sugar factory, and food factory plant; steel-framed buildings;

heating radiators and boilers; malleable iron and gunmetal fittings and gunmetal and cast iron valves for the heating, oil and sanitary engineering trades; brass and copper base alloys; metallurgical plant for the manu. of bearings, etc.; cigarettes; lotterpress and lithographic printing and stationery; sawing and planing machines; plywood, wall boards and plastics; domestic engineering articles; refrigerating plant; sacks, bags and tarpaulins; garden seats and other garden furniture.

**Dock and airport.**—Vessels drawing 19 ft. can enter the dock (area 26 ac.) at I. and ships up to 7000 tons can berth at Cliff Quay. Following on the passing of the first I. Dock Act, 1837, work on a new dock began in 1839 and, by 1843 I. had the largest wet dock in Great Britain. In 1852 the dock commissioners became a corporate body with much increased powers. In 1881 a larger entrance lock was opened and in 1904, 800 ft. of new quay was built. In 1923-2, came a new deep water quay (1800 ft.) on the E. side of the Orwell. The docks and quays are equipped with modern electric cranes and all rail facilities. The airport (opened in 1930) of I. on the E. outskirts of the tn. is one of the finest municipal airports in the country.

**History.**—Anc. relics indicate that I. was the site of a Brit. settlement 2000 years ago or before the Rom. occupation. Throughout the Saxon period, I. or Gypseywyk as it is called in the *Anglo-Saxon Chronicle*, began a steady development which at length attracted the attention of Dan. marauders. The Danes were defeated at sea off the mouth of the Orwell in 880 by King Alfred; but in 991 and 1000 they invaded and set fire to the tn. and levied a fine of £10,000 upon the inhabs. But these raids do not appear to have had any lasting effect on the tn., whose port rapidly outgrew those of the rival townships on the E. coast. At the time of the Domesday Survey I. had as many as 9 churches. In 1199 I. received its first charter, granted by King John (see above) which gave to the inhabs. liberties and privileges they had never previously enjoyed and exempted them from many taxes. By 1280 the traffic through the port was of sufficient vol. to justify the appointment of a collector of customs. I. was in fact a flourishing port when Hull was still an insignificant vil., and Liverpool merely a swamp. It was at I. that Robert de Beaumont, earl of Leicester, landed with a force of Flemish mercenaries to attack the King's armies near Bury St. Edmunds in 1173. In 1338, the tn. sent 12 ships, in addition to men and supplies, to join the earl of Leicester's fleet before the battle of Sluys. It was to Edward III. that the tn. owed the introduction of an industry that brought it new prosperity; for he brought over to England 70 families of Wallons, who were weavers and wool-workers, and the woolen industry grew rapidly in Suffolk generally. In 1446 occurred the election of the tn.'s first representatives in Parliament; from 1446 I. continued to send

2 members to Parliament, until 1918 when the number was reduced to one. In 1518 Henry VIII. granted to the corporation jurisdiction over the Orwell estuary as far as what is now the port of Harwich. The course of the seventeenth century saw the migration of the woolen industry northward and westward, and by 1650 the trade of I. had declined by one third, but as a set-off the tn. had begun to participate in the profitable coal importing trade between Newcastle and London. More skilled foreign artisans came to I. in the reign of Charles during the religious persecutions of the Huguenots. Shipbuilding became a major industry of the port in the seventeenth century and many E. Indiamen, as well as warships, were launched from its yards. It was still being carried on as late as the middle of the nineteenth century. But the size of the ocean-going ships increased beyond the capacity of the I. yards, so that the industry declined and ultimately disappeared. Among the famous names associated with I. that of Wolsey (b. in St. Nicholas Street 1171) is pre-eminent. Horatio, Lord Nelson, was High Steward of the bor. from 1800 to 1805. Adm. Lord Vernon was the tn.'s parl. representative in 1741, 1747, and 1754. Viscount Kitchener of Khartoum and of Aspal (Suffolk) was High Steward, 1909-16. Thomas Gainsborough and John Constable both spent part of their lives in I. Francis Bacon was sev. times member of Parliament for I. Yet other names are those of Sir Christopher Hatton, after whom Hatton Court is named; Thomas Clarkson, after whom is named Clarkson Street; Thomas Cavendish, the navigator, after whom Cavendish Street is named; David Garrick, who began his stage career in I.; Jean Ingelow, Rider Haggard, Bernard Barton, the Suffolk poet, and the Rev. Richard Cobbold, author of *The History of Margaret Catchpole*, 1845. Pop. (estimated, 1947) 101,000.

**Iquique**, city and seaport in Chile, cap. of the prov. of Tarapaca, 820 m. N. of Valparaiso, on the Pacific coast. Owes its commercial importance chiefly to the export of nitrate of soda and borax. Until 1830, when the export of nitrate began, I. was only a small fishing vil. of little importance. It is now connected by rail with the inland tn. of Tarapaca and various mining centres and is well provided with tramways, electric light, telephones, etc. It was founded in the sixteenth century, upon a peninsula between the Colorado and Cavancha headlands. Twice, in 1668 and 1875, the tn. was nearly destroyed by an earthquake and tidal wave, and in the war between Chile and Peru it was ceded to the former by treaty in 1883. Water is brought to the city from Pica, 60 m. away, a vil. settled by Sp. soldiers in the sixteenth century. Large deposits of guano are found on the coast. The climate is rainless. Pop. 39,200.

**Iquitos**, tn. of Peru, and cap. of the dept. of Bajo Amazonas de Loreto, situated on the Marañon, a branch of the Upper

Amazon, 2300 m. from the mouth, and 1268 from Lima. It is a Peruvian flotilla naval base. There is a wireless station and a regular air service. Pop. estimated at 20,000.

**Iquitos**, tribe of S. American aborigines, in the region between Peru and Ecuador, on the N. part of the Upper Amazon.

**Irak-Ajemi**, central prov. of Persia, almost corresponding to the ant. Media. Its surface consists very largely of elevated table-lands, but there are numerous fertile valleys, rich in cereals and fruits, but only partially cultivated. The E. part is occupied by the great salt desert of Dasht-i-Kavir, or Khorassan. It comprises the modern dists. of Kurdistan, Ardiclan, Luristan, Isfahan, and Kashan. The prov. contains the prin. tns. of Persia, including Teheran, the cap., and Isfahan. The industries consist in the weaving of carpets, most of which are exported to Europe, and the manu. of glass and porcelain. Area, 138,190 sq. m. Pop. (estimated) 3,000,000.

**Iran**, or **Eran**, originally the name of the great plateau bounded on the N. by the Caspian Sea and Turanian Desert, on the S. by the Persian Gulf and Indian Ocean, on the E. by the Indus and on the W. by Kurdistan and the Tigris. The name, which is now the official designation of the Persian kingdom, is derived from *Aryāna*, 'the country of the Aryans.' Strabo declared that the name and language extended to the Persians, Medes, Sogdians, and Bactrians, as well as to the inhabs. of the S.E. of I. *See* PERSIA.

**Irapuato**, tn. of Mexico in the state of Guanajuato. It is an important railway junction, and is situated on the railway between Mexico and Guadalajara. Pop. 29,700.

**Iraq** (*Mesopotamia*, 'the land between the rivers'). A kingdom in the Middle E., extending from Kurdistan on the N. and N.E. to the Persian Gulf on the S. and S.E., and from Persia on the E. to Syria and the Arabian Desert on the W., the position being between 37° and 48° E. long., and from 37° to 30° N. lat. The country has an area of 160,600 sq. m. and includes the former Turkish vilayets of Mosul, Bagdad, and Basra.

The pop. according to the census of 1915 was 1,611,350. The pop. of the chief towns is: Bagdad, 1,009,098; Mosul, 553,488; Basra, 400,078; Diwanich, 331,909; Muntadig, 281,617; Arbil, 273,197; Diyala, 269,752; Hilla, 263,837; Kirkuk, 262,209; Amara, 183,911; Kut, 180,145; Sukemani, 175,812; Dulaime, 157,616; and Karbala, 140,356. Of a total pop. of 3,560,500 in 1935, there were 313,600 Moslems; 101,300 Christians; 90,900 Jews; and 41,100 of other religions.

**Physical Features**.—I. may be divided into three main divs.: the Plain, the Uplands, and the Highlands. The Plain consists of the delta of the Tigris and Euphrates, and extends roughly from the Persian Gulf to a line joining Falujah with Khanaqin. The soil is alluvial, and there is no stone. The rivs. run along ground a few ft. higher than the rest of the Plain,

which is consequently liable to be flooded when the rivs. are high. This happens each spring when the snows in Kurdistan and Armenia melt, local rain having but small effect on the rivs. The rise of the Tigris at Bagdad is sometimes as much as 23 ft., and that of the Euphrates as much as 14 ft., at Falujah. At no point is the Plain higher than 150 ft. above sea level. The ann. rainfall on the Plain averages 6 in. only, and cultivation depends almost entirely on irrigation. There are three chief forms of irrigation: (i.) perennial, in which form the land is planned and the canals from the riv. to the land to be irrigated are designed in such manner that the water in the riv. will always 'command' the land, or, in other words, flow on to the land; (ii.) from inundation canals, in which form irrigation canals are excavated from the rivs. to the land in such manner that the water, during spring, will command the land, and so give enough water for summer crops—a very unscientific form of irrigation; and (iii.) lift irrigation, in which form water is lifted by pump and engine or other mechanical means from the riv. or canals up on to the bank, whence it flows down a small water channel on to lands closely adjoining the riv. This last form of irrigation has become more popular recently with the cheapening of oil through the development of oil in I. The chief irrigation works are in the Hindiyah Barrage, the Daghurrah Barrage, the Beldi Regulator, and the Diahah Weir at Table Mountain. There is a rich date-palm area around Basra, and the date trade there is large, 75 per cent. of the world's consumption being produced in this area. The Uplands div. forms the area between the Plain and the Highlands, and consists, in the S.W. portion, of an uncultivable gypsum desert, but in the N. and N.E. of rolling plains with good soil and with a rainfall thrice as heavy as that in the Plain. Mosul, Kirkuk, and Amil, the chief tns., are situated on rich soil between 700 and 1200 ft. above the sea level, the rain being heavy enough for growing winter cereals extensively. The best time to tour these areas is in April and May, when the country is very beautiful. There is no irrigation to speak of, though around Arbil and Kirkuk it is carried on in a small way by the ant. system of 'Karez,' a system known in the Middle E. and Afghanistan for centuries. This mode of irrigation is by a series of wells connected by tunnels, the tunnels being skillfully directed, and so inclined as to bring the water to the surface at the desired spot. The Highlands lie N.E. of a line drawn from Falsh Khabour to Khanaqin, and are crossed by a number of ranges of mts. rising at some points to 14,000 ft. There are many beautiful valleys and plains among these mts., and the valleys are full of flowers. Rainfall is heavy in winter, and may continue till May. The mts. are covered in snow throughout the winter. Fruit is grown in the N., tobacco in the S. Highlands, especially in the dists. of Sulaimanlyah and Hanla.

*Iraqi Tribes*—Outside the cities the pop. of I. is almost entirely tribal, and divided into communities of kindred families under their own chiefs or sheikhs. It is easy to observe in I. the various stages of tribal development from the nomad of the desert to the riverain cultivator, and in the transit from desert to tin (where that has taken place) the tribes have lost little of their tribal characteristics and customs. In the Plain there are Bedouin or Biduin tribes, nomadic pastors of camels, sheep and horses, others are semi-nomadic or semi-settled and marsh tribes. The three chief I. down tribes of I. are the Shammar living between the Euphrates and the Tigris, the Dhafir in the S. and elsewhere the Aruzah. Blood feuds still prevail and the tribes have their own unwritten codes and methods of punishing offenders or settling quarrels, and the I. Gov. in its administration has to pay due regard to tribal custom. Wealthy cultivators still take a pride in dwelling in black tents, reminiscent of the time of Abraham, while the modern man's guest house is but a well-lighted even though he and his family may live in a house.

*Constitution and Administration*—By a treaty of alliance (1930) between Great Britain and I. King Faisal bin Husain (the first king of I.) (the I. Britain undertook to give I. such advice and assistance as might be required without prejudice to I. sovereignty) to support the armed forces and financial etc. of I., and to use its good offices to secure the admission of I. to membership of the League of Nations as soon as possible. I. was admitted to the League of Nations in 1932. To effectuate this treaty, there was a Brit. adviser to each Minister of the I. Cabinet, and also a number of Brit. officials in each ministry, all being responsible to the I. Gov. Legislative power is vested in Parliament with the king of I. and the Parliament consists of the Senate and the Chamber of Deputies. The Senate has twenty members or elder statesmen nominated by the king of I. and the Lower House 112 deputies elected on the basis of one deputy to every 20,000 male subjects. I. is divided into fourteen main administrative divisions, each being administered by a *Mutasarrif*, who is responsible to the Ministry of the Interior but is also the agent and representative of the other ministries. Each *hwa* is divided into two or more *qadhas*, administered by a *Quim Maqqam*, and each *qadha* is divided into two or more *nahiyas*, administered by a *Mudir*.

*The Iraq Army*—The decline of I. during the years following the First World War was mainly in the hands of the R.A.F. and sev. Brit. squadrons were stationed in the country. But after 1922 the R.A.F. command was transferred to Hinaidieh, where it is stationed solely to safeguard Brit. interests. In 1939 the Iraqi army contained two *divs* (twenty-eight infantry battalions, three cavalry regiments, six batteries of mt. artillery, etc.). The air force comprised two army air co-operation squadrons, one bomber transport squadron, and one fighter squadron.

The total strength of the army and air force was then 28,000 officers and men. Compulsory military service for all men between nineteen and twenty-five had come into force in 1936. The bulk of the rank and file are Shi'ah tribesmen of S. I., but Kurds and Turcomans are enlisted in considerable numbers, together with Assyrians (Chaldeans and others) and others. There is also a police force of 10,000 men, half on foot and half mounted. There is a camel corps which patrols and garrisons the W. and S.W. frontiers in co-operation with twenty armed cars. In certain districts which are inclined to be turbulent a system of police post in helicopter-like touch with one another has done much to isolate kings of murderers and to bring peace and prosperity to the area.

*Education*—There is a Ministry of Education staffed by Iraqis. Primary schools are established in the *hwas* and elementary schools in the vil. There are about 103 elementary and primary schools and 71 secondary and intermediate schools, the chief being at Bagdad and Mosul and in I. schools have a troop of boy scouts. There are also two technical schools for boys, a home arts school for girls, and seven training colleges for elementary school teachers. There is no university, but certain schools or colleges such as the College of Medicine, the Law School, the School of Agriculture, and the Engineering School provide specialised courses after completion of the secondary courses.

*Medical Services*—The organisation of modern hospitals staffed by personnel from the Royal Medical College and the Ebnuna College at Bagdad is one of the triumphs of the Brit. mandatory or treaty regime. Gradually the tribesmen who had hitherto resented such aid in their own ignorant tribal doctor required the help of coming into the hospitals attended by the stories of wonderful cures. The Gov. Public Health Service controls all medical practice and maintains a score of hospitals and some seventy dispensaries.

*Agriculture and other Resources*—Agriculture is the chief occupation, and yields the bulk of the revenue. Most of the agric. pop. is engaged in the extensive (i.e. a light amount of work put into a large extent of country) cultivation of wheat and barley in winter and in summer such crops as rice, dates, maize, sugarcane, and sesame. The cultivator class is quite distinct from the pastoral, which latter is the nomad Arab. Cotton has been added as a summer crop, and good quality Amor types of cotton give profitable yields. In 1915 there were 6000 ac. under cotton. The flocks of sheep, goats, and camels cover enormous areas of grazing ground, and the desert, after good rains, provides plenty of nutritious grasses. The oil resources of I. are most important, and are jealously guarded by many European Powers. They are developed by two companies—the Turkish Petroleum Company, and the Khanaqin Company, the latter being a subsidiary of the famous Anglo-Persian

Oil Company. The Turkish Petroleum Company is operating wells under a Concession granted by the I Gov in 1925. An oilfield, 30 m<sup>2</sup> of Khanaqin near the Persian frontier, is worked by the Khanaqin Oil Company. The Brit Oil Development Company (Mosul Oilfields Ltd) holds a concession for oil covering Iraq ter W of the Tigris and N of lat. 33°. The Basra Petroleum Company hold a concession for oil covering the southernmost part of the country. Oil production in I averages over 4½ million tons annually. The Company's pipe line bifurcates after some distance, one branch

vailing N.W. wind acts with the current so that sailing craft have to be towed upstream, and again, the rvs are very shallow in autumn. Between Mosul and Bagdad flat bottomed boats and stern-wheel steamers carry freight during April and May, and rafts of skins and poles are used for produce carried down stream to Bagdad. Motor boats are also used. No steamers ply on the Euphrates, which is too shallow, and sailing craft carry the local freight. The Shatt el Arab, which is formed by the combination of the Tigris and Euphrates at Qurnah (the traditional site of the Garden of Eden) is navigable to



THE TOMB OF ZULAIKHA IN IRAQ

ending at Haifa, and the other at Aleppo. The chief exports are dates, wool, grain (barley for the most part), hides and skins, cotton, liquorice, and gill nuts; oil will no doubt take an important place in the future. There is also a large transit trade amounting to the ann value of £1,000,000, this trade being chiefly with Persia.

**Transport**—There are four main railway lines radiating from Bagdad. These terminate at Mirat (the port of Basra) at Khanaqin (near the Persian frontier) at Kirkuk, and at Baqi. The Khanaqin and Kirkuk routes branch apart at Qaraghau Junction. The Bagdad-Basra line has short branch lines to Karbala and to Nasiriyah. A standard gauge line from Bagdad to Tel Kutchik passes along the r b of the Tigris via Mosul. The main Basra-Bagdad line passes the ancient sites of Ur, Babylon, and Kish, and special railway facilities exist to enable travellers to visit these cities. The total mileage of track is 950. (See also BAGDAD RAILWAY.) There are some 4000 m. of roads and tracks, but only 750 m. of metalled track roads, and yet it is possible to motor to almost every part of the country over the earth roads, except the mountainous regions and the marshes. Riv transport plays an important part in the life of the country, but navigation of the rvs. is difficult owing to the fact that the pre-

vious steamers is far as Basra. Air mail is dispatched and received in mails conveyed by the Brit Overseas Airways Corporation. Air mail communication with U.S.A. is maintained from Hong Kong to San Francisco by the Pan-American Transpacific Air Service.

**The Holy Cities of Iraq**—The Holy Cities of Nejat, Kerbela, Kadhnan and Samarra are focal points of importance to all devoted (Shi'ah) Moslems, who come into them on pilgrimages from Persia, India and other countries as well as from I. The Shrine of Ali at Nejat is erected on the historical spot where, according to tradition, halted and rested a camel which had been set loose from Kufah carrying the body of Ali the son in law of the Prophet. Ali was told, had been killed at prayer in the famous mosque at Kufah 6 m. distant from Nejat. At Kerbela are the shrines of Hussain and Abbas. Hussain the son of Ali, was killed slain with his following of 300 men at a battle at Kerbela.

**Antiquities**—A valuable collection of antiquities is housed in the I Museum, which was erected by the celebrated (critic) Lowthian Bell (qv), who organized and for many years directed the Antiquities Dept. of the Museum. The colossal statues of the scribe gods Nabu and the winged bulls now in the courtyard were brought from the palace of Ashur-nasirpal II and Shalmanasser, at Calah (Nimrud),

in 1928, and there are, besides, antiquities from the earliest period down to 1700 B.C., the whole illustrative of the continuous hist. of I. These antiquities include painted pottery from Kish (q.v.) and elsewhere; inlaid friezes from Ur and Kish; gold, silver, and copper vessels and weapons from Ur; statues from Adab and other places; ivory combs, toilet boxes, pins, etc. from various sites; terra-cottas and numerous other objects of a fascinating character. At Eridu in S. Iraq, a few miles S. of Ur excavations have revealed a temple dating, perhaps, from about 1000 B.C., and a cemetery said to be at least 6000 years old. It is divided into brick compartments pointing S.E. and each of these contained implements evidently intended for the future life. Other finds nearby included the remains of ten temples at different levels. The lowest of these levels also contained a temple of the fourth millennium B.C., and the highest a Sumerian tower dating from about 2200 B.C.

For the results of archaeological excavation, see BABYLONIA:—Recent discoveries; UR.

*History of Iraq since 1914.*—In 1914, after Turkey had declared war on the Allies, a Brit. force was landed at Basra to protect Brit. interests in the Persian gulf. The force was not originally intended to drive out the Turks, but, attack being often the most effective means of defence, the force advanced up the Tigris. Flushed with their initial success, they advanced too far, and eventually capitulated at Kut-al-Amara (see MESOPOTAMIAN FRONT; TOWNSHEND, SIR CHARLES). Reinforcements were then obtained and pushed forward in 1917 under Sir Stanley Maude (q.v.) to recapture Kut, which place, after heavy fighting was occupied by the Brit., who then rapidly pursued the routed Turks. They entered Bagdad on March 11, 1917. Gen. Maude then issued a proclamation to the people telling them that the Brit. had come to liberate them from the Turks: that the Brit. wished the people of I. to regain their past prosperity. Hence in 1921 the Brit. Gov. implemented these promises, and after election by the people, King Faisal acceded to the throne of I. on Aug. 23, 1921. This was not, however, accomplished without opposition and bloodshed. Amidst a welter of conflicting interests—Britain's enemies playing off Indian against Arab—Great Britain announced her acceptance of the mandate for I. under the League of Nations. Meanwhile the Arab Gov. at Damascus had encroached on the Euphrates boundary, with the result that the tribes N. of Bagdad and around Mosul broke out into revolt. This precipitated a general Arab rising in the Mosul region (1920). Reinforcements arrived, however, and order was speedily restored in that part of the country. The Arab tribes in the middle Euphrates region and around Hillah and Bagdad, including the most turbulent in the country, then agitated against the Brit. mandate, and, after the announcement that Sir Percy Cox would be

appointed High Commissioner with power to create a Council of State under an Arab president and an elective assembly, the whole of Central I. rose in arms, and a body of young troops of the Manchester regiment, numbering about 300, were massacred, and numerous Brit. officials were either murdered or made prisoner (1920). Troops were rushed from India, many of the leaders of the revolt were deported, and order was gradually restored, agitation by the Iraqis being further discouraged by the fact that the Fr. had in the meantime occupied Syria, and so ended the régime there of King Faisal. Sir Percy Cox, having assumed office, invited the Naqib of Bagdad, one of the foremost Arab dignitaries, to form a Provisional Council of State. Soon afterwards it was learned that Faisal was journeying to I. as a candidate for the crown, and after a referendum on the rival claims of himself and Ibn Saud, Faisal was duly proclaimed elected King. Faisal then called upon the Naqib to form a Cabinet, or rather to continue the administration with the members of his Council. It now seemed to the outside world that 'Great Britain could lay down the burden she had hardly yet shouldered.' But, as subsequent events showed, the transformation was as yet merely on paper, and all the work of educating the country into the ethics of western institutions was to come. The years 1921-22 were marked by further disturbances, notably on the Kurdish border, in the S.W. of I., and, once again, in the Mosul prov. These disturbances were to a large extent fomented by agents of Turkey, with which country the Allies were still theoretically in a state of war, and, moreover, Britain had shown pro-Gk. sympathies in the Greco-Turkish war, 1921-22. Brigandage was rampant, and the desert tribes, particularly the Shammar, were creating further difficulty by seeking refuge in I. from the punitive operations of Ibn Saud, the Sultan of Najd. The Shammar were the hereditary foes of Saud, and the latter's forces followed them into I. and attacked the I. camel corps and shepherd tribes not far from the railway between Bagdad and Basra. All this trouble coincided with an agitation by Faisal and his prime minister for the complete abrogation of the Brit. mandate as being inconsistent with Iraq's sovereign independence. At this time I. wanted a treaty in place of the mandate, whereas Britain was aiming at a treaty within the mandate; so that the difference was purely technical, but the position was complicated by an Arab agitation against even a treaty relationship. Faisal, however, urged on by this agitation, refused to sign the treaty, with the result that Sir Percy Cox assumed sole authority, and by vigorous measures against agitators restored order. This accomplished, a treaty was at length substituted for the mandatory relationship, although, as between Great Britain and the League of Nations, the mandatory obligation necessarily still subsisted. Great Britain undertook to secure I.'s admission to the League in certain

events, the principle of this policy being the ability of I. to defend herself. Even if the I. Nationalists had some cause for raising a charge of breach of faith against Great Britain in regard to I.'s early admission to the League, the whole situation was obscured by the Turkish menace to Mosul, which prov. the Turks flatly refused to cede, trusting to the sympathy of France. Negotiations between Great Britain and Turkey having failed, an International Commission was appointed by the League to adjudicate on the Mosul boundary. The outcome of these deliberations was that Mosul was given to Iraq, and in Jan. 1926 a new treaty was accordingly signed between Great Britain and I. extending the period of the previously existing treaty from four to twenty-five years after the ratification of peace with Turkey (see LAUMANNE, TREATY OF), i.e. from Aug. 6, 1921, for twenty-five years, or until such time as I. might be admitted to League membership. In 1932, however, the mandatory régime came to an end with I.'s entry into League membership. King Faisal I. in 1933 and was succeeded by his son Ghazi, who d. in April, 1939, as the result of a motoring accident, and was in his turn, succeeded by his infant son, Faisal II. (b. 1935). I. now reverted to its habitual régime of intrigue and violence. Already the more enlightened parties of Gen. Nuri es-Said Pasha and Yasin Pasha, the Nationalist, had been ousted by the machinations of Hikmet Suleiman and Bakir Sidki, chief of staff, in 1936; but Sidki was assassinated by a soldier in 1938 and his colleague Hikmet resigned in favour of Nuri Pasha, who now returned from exile. I., under Nuri, sided with Britain in the Second World War and broke off diplomatic relations with Germany in accordance with the terms of the alliance. But a dangerous revolt was prepared by Rashid Ali in 1941 in conjunction with the Ger. gov.

**Revolt in Iraq.**—A coup d'état, dangerous in its possible repercussions on Brit. interests in the Middle E., was carried out on April 3, 1941 in Iraq by a group of military leaders, their civilian allies being Sayid Rashid al Gailani, prime minister, and Hajj Aunni, the ex-Mufti of Palestine, who had led the anti-Brit. revolt in Palestine sev. years previously (see PALESTINE) and had fled to Beirut and thence to Iraq. After 1936, when Gen. Bagir Sidki set up a dictatorship, ushered in by the murder of Janfar Pasha (q.v.) and terminated by his own assassination, military interference became chronic in the political affairs of Iraq. Rashid Ali tried to give the movement a pan-Arab flavour, but there is no evidence that he had much support in his own or in the neighbouring Arab countries. The leaders of the movement chose a moment when the Brit. Gov. had their hands full in the Balkans and in Africa and when the Regent, Emir Abdul Ilah, was absent from the cap. By treaty arrangements with Iraq, Britain had acquired bases in the country through which to defend her communications E. and W., and the coup

d'état which was fomented by Ger. influence and promises of military aid, was timed to coincide with Germany's attack on Libya and in the Balkans, and, no doubt, to enable Ger. agents to secure control of the Iraqi oilfields. For long Germany had been exploiting whatever might be to her advantage in Iraq, and her efforts in this direction were guided, as long previously as 1936, by Herr Grobba, the able,



L.A.A.  
A YOUNG KURD OF BAGDAD

if unscrupulous, Ger. minister in Bagdad. But apart from Ger. influence and the hostility of the ex-Mufti, the Brit. Gov. had long experienced difficulties with the Iraqi Army, which had no particular connection with Germany, first over conscription and then over armaments. Germany naturally exploited Iraqi disaffection on the armaments question which when the war broke out was still a stumbling block between Britain and Iraq. Ger. agents gradually succeeded in suborning the services of the four chief army commanders, who became known as the 'Golden Square.' The most remarkable of these was Salah-ed-Din, commander of the W. Army, who, like the ex-Mufti of Palestine, had once served in the Turkish army. But it was Rashid Ali who gave his name and political influence to the rebellion, a man who came of one of the oldest and noblest families of Islam, being a descendant of the eleventh-century saint, Abdul Qadir al Gailani, whose memory is still revered in these regions. Rashid himself was an obscure scion among many sons of a wealthy father and had spent the previous war in the Turkish legal service. He first entered the Iraqi cabinet in 1926 as minister of the interior. For a long time he had been regarded by the Iraqis as untrustworthy and a double-dealer. In 1933 he became prime minister for the first time and revolutionised his country's financial affairs; he became prime minister again in 1940 and then quarrelled with the Brit. Gov.

over the It. legation in Bagdad. The fact that Iraq never broke off relations with Italy as she had done with Germany enabled propaganda to be continued by It. and Ger. agents with It. passports, Berlin being the directing force. Rashid's actions were not inspired by anglophobia, but were rather the outcome of a gradual drift into hopelessness over any pro-Arab solution of the Palestine question (see BALFOUR DECLARATION; PALESTINE) and fear of a Ger. victory in the war. Gen. Wavell's great victory in the battle of the W. Desert (*see above*) had no effect on the Arab mind in Iraq, the It. as a military race counting for nothing in their eyes. Thus the rapprochement between Rashid Ali and the Gers. now began seriously to jeopardize Anglo-Iraq relations. The premier's party, averse from a breach with their traditional ally, Britain, left him, and early in 1941 Rashid, casting about for new friends, joined forces with the Golden Square and tried to force the regent to appoint puppets to the cabinet (Jan. 1941). The regent, however, escaped to Diwaniyah where the Army commander was loyal. This earlier crisis achieved little and Rashid Ali went out of office, being succeeded by Gen. Taha al Hashimi. The new prime minister's efforts to dislodge the Golden Square, however, proved abortive and while the four remained nothing could be done to dissipate the baneful influence of the It. legation. In April the Golden Square, aided by Ger. funds, took matters into their own hands and, marching by night into Bagdad, seized all the key positions. Taha resigned and the regent again fled, while the young king, Faisal II., was kept a close prisoner. Amidst these events Sir Kinahan Cornwallis, the new Brit. ambas., arrived in I. and skillfully made use of the rebel gov.'s superficial attitude of conciliatoriness to effect a peaceful landing of Brit. troops at Basra. But the arrival of still more transports soon afterwards precipitated the coup of April 3. The Iraqi military leaders, relying on the Ger. military aid which never reached them, now decided to get in the first blow. Without warning they made a second night march across the Tigris and Euphrates to the Brit. air base in the W. and took up positions on the low escarpments at Habbaniyah. Thence they attacked the R.A.F. aerodrome. The R.A.F. at once accepted the challenge and very soon their repeated raids on the military aerodromes of Mesopotamian Rashid and on the Bagdad airport had resulted in the destruction of most of the Iraqi air force and planes. Rashid Ali's brief Ger.-proped régime tumbled as Brit. troops came within 5 m. of the cap and he himself fled to Iran with his chief supporters. His revolt, in fact, had been premature. Meanwhile the regent had returned and exhorted the people to join in the fight against the Nazi hirelings who had plunged their country into war. The campaign was short-lived. A Brit. mobile column, having overcome the Iraqi positions at Habbaniyah, marched on Bagdad, Khan Buqta fell on May 28

and Fallujah soon afterwards. The revolt then completely collapsed. I. declared war on the Axis powers in 1943, but with little active participation. Sympathy with the Arabs over the Palestine question was manifest, and the Premier Nuri Pasha visited the heads of most Arab states in 1944, thus promoting the Pan-Arab Congress of Sept., from which, in 1945, developed the Arab League. In 1947 all Brit. forces were withdrawn except the two R.A.F. bases at Shaibah and Habbaniyah. On Jan. 13, 1948, an Anglo-Iraqi treaty was signed, but immediately widespread demonstrations against it took place, the cabinet of Sayid Saleh Jabr resigned, to be succeeded by that formed by Mohammed al Sadr; the treaty was rejected on Feb. 1, since it did not 'realise Iraq's national aims.' The end of the Brit. Palestine mandate and the proclamation of the state of Israel brought the Palestine situation to a crisis; on the night of May 14-15, 1948, Iraqi troops joined with those of Egypt, Transjordan, Syria, and Lebanon, in the invasion of Palestine.

*See* P. S. P. Handcock, *Mesopotamian Archaeology*, 1912; R. Koldewey, *The Excavations of Babylon*, 1914; L. W. King, *A History of Babylon*, 1919; C. L. Woolley, *Dead Towns and Living Men*, 1920, *The Excavations at Ur and the Hebrew Records*, and *The Sumerians*, 1929; W. A. and E. T. A. Wigram, *The Cradle of Man*, 1922; T. Layell, *Ins and Oils of Mesopotamia*, 1923; E. S. Stevens, *By Tigris and Euphrates*, 1923; L. W. King, *Sumer and Akkad*, 1923; Gertrude Bell, *Amurath to Amurath*, 1924; R. Coke, *The Heart of the Middle East*, 1925; D. MacKenzie, *Ancient Cities of Iraq*, 1926; R. Coke, *Baghdad, The City of Peace*, 1927; S. Smith, *Early History of Assyria to 1000 B.C.*, 1929; *Report on Excavations in Iraq during the Season 1928-29* (Government of Iraq), 1930; E. Main, *Iraq from Mandate to Independence*, 1935; P. W. Ireland, *Iraq, A Study in Political Development*, 1937; Seton Lloyd, *Foundations in the Dust*, 1947.

Irawadi, or Irrawaddy, chief riv. of Burma, is formed by the confluence of the two arms of the Malikha and Mehkha, which rise in the N.E. of Assam, near the Tibetan frontier, a short distance above Bhamo. It follows generally a course from N. to S., a total distance of 1500 m., and falls into the bay of Bengal, between the bays of Martapan and Cape Negrais, through a wide delta with nearly a dozen mouths. The delta is a fertile rice-growing district, but only two of the mouths, the Bassein and the Rangoon, are navigable for big boats. The chief tribes are the Chindwin and the Shweli, and the chief towns, on its banks are Hasein, Rangoon, Prome, Ava, Mandalay, and Bhamo. The riv. is the great highway for commercial traffic, and drains an area of about 188,000 sq. m. of very fertile land. *See also* BURMA, SECOND WORLD WAR, CAMPAIGN IN.

Irbbit, tn. in the Sverdlovsk Region of the R.S.F.S.R. at the junction of the Irbbit and Nitsa, 110 m. N.E. of Ekaterinburg. It



is connected by steamboat lines with the prin. tns. of the Obi Valley, and has a large ann. fair in Feb., considered the most important, in Asiatic Russia, and attended by a number of European and Asiatic merchants. Pop. about 20,000.

**Ireland, John** (b. 1879), Eng. composer, b. at Bowden, Cheshire, son of Alexander I. He was educated at Leeds Grammar School and at the Royal College of Music, studying under Stanford. Began with concerted chamber music and songs. Two violin sonatas followed, and these estab. his reputation at once. His best-known subsequent works are a pianoforte sonata, *Mai-Dun*, a symphonic rhapsody (1921), and a piano concerto. Has also written a number of songs, one of the best being the setting of Maschke's *Sea Fever*, and shorter works for the pianoforte. Other works include the song-impression *Mare-gold*; *the Land of Lost Content*, being song settings to *A Shropshire Lad*. His work is characterised by its austerity, lyrical beauty and sincerity. See study by R. Hill in A. L. Bacharach's *British Music of our Time*, 1940.

**Ireland, William Henry** (1777-1835), forger, inherited the interest of his father, Samuel Ireland, not in the works of Shakespeare; but in him it took the form of inventing documents concerning the poet, and imitating his handwriting and signature. The forgeries were so well executed that they deceived, not only Samuel I., but such men as Dr. Parr, Sir Isaac Heard, and Dr. Warton. Encouraged by his success I. wrote two plays, *Vortigern and Rowena* and *Henry II.*, which he ascribed to Shakespeare. The former was produced by Sheridan at Drury Lane in March 1796. Malone exposed the fraud, which the perpetrator acknowledged in his *Authentic Account*, 1796. This was expanded (1803) into his *Confessions*.

**Ireland**, is. lying to the W. of Great Britain. It is separated from Great Britain on the E. by the N. Channel (13½ m. wide) and the Irish Sea (130 m.), and on the S. by St. George's Channel (47 to 69 m.). It is encircled on the N., the W., and the S. by the Atlantic Ocean. In shape the Is. is an irregular rhomboid, the greatest diagonal, from N.E. to S.W., being 302 m. in length. The total area is 32,605 sq. m. I. is divided into two states, N. Ireland and the Republic of I. (Eire), the former being part of the United Kingdom.

**Climate.**—The climate of I. resembles that of Great Britain, but is more equable. It is influenced by the Gulf Stream and by the S.W. winds. The prevailing winds off the ocean cause a greater amount of rainfall, and the rain is more evenly distributed over I. than over Great Britain. In the latter country the mts. in the W. present a barrier to the S.W. winds; but I. has no mt. ridge lying N. and S., which fact accounts for the more equal rainfall. The constant rain promotes luxuriant vegetation, which has given I. its name of 'Emerald Isle.' The mean temp. in Jan. is seldom below 40°, while in July the extreme mean temp. are 58° in the N. and 60° inland.

**Area and Population.**—According to the census of 1946, the following are the areas and pop. of the provs., cos., and co. bors. of the Republic. The names of the caps. appear in parenthesis:—

PROVINCES, COUNTIES AND COUNTY BOROUGH	AREA IN STATUTE ACRES	POPULATION
<b>Prov. of Leinster</b>		
Carlow (Carlow)	221,185	34,048
Dublin Co.	208,984	635,876
Dublin Co. Bor.	18,740	506,635
Kildare (Naas)	418,644	64,834
Kilkenny (Kilkenny)	509,170	66,083
Leix (Maryborough)	421,892	49,634
Longford (Longford)	257,935	36,221
Louth (Dundalk)	202,814	66,135
Meath (Trim)	577,824	66,220
Offaly (Tullamore)	493,636	55,614
Westmeath (Mul-lingar)	435,605	51,880
Wexford (Wexford)	581,061	91,704
Wicklow (Wicklow)	500,250	60,310
<b>Total of Leinster</b>	<b>4,551,340</b>	<b>1,280,219</b>
<b>Prov. of Munster</b>		
Clare (Ennis)	787,756	85,071
Cork County	1,840,908	343,243
Cork Co. Bor.	2,685	75,361
Kerry (Tralee)	1,161,705	133,818
Limerick (Limerick)	661,585	142,480
Limerick Co. Bor.	2,386	42,987
Tipperary	1,051,292	135,981
Waterford Co.	452,840	76,157
Waterford Co. Bor.	1,438	28,332
<b>Total of Munster</b>	<b>5,962,595</b>	<b>916,750</b>
<b>Prov. of Connaught</b>		
Galway (Galway)	1,467,660	165,196
Leitrim (Carrick-on-Shannon)	376,761	44,577
Mayo (Castlebar)	1,333,941	148,200
Roscommon (Roscommon)	603,540	72,511
Sligo (Sligo)	113,917	62,331
<b>Total of Connaught</b>	<b>1,230,822</b>	<b>492,861</b>
<b>Prov. of Ulster</b>		
(part of)		
Cavan (Cavan)	467,162	70,323
Donegal (Lifford)	1,193,581	136,136
Monaghan (Monaghan)	318,985	57,208
<b>Total of Ulster</b>		
(part of)	1,979,728	263,667
<b>Total for Eire</b>	<b>17,024,485</b>	<b>2,953,432</b>

The following are the areas and population of the counties and boroughs of N Ireland, according to the census of 1937

COUNTIES AND COUNTY BOROUGHS	AREA IN STATUTE ACRES	POPULA- TION
Antrim (Antrim)	702,900	197,266
Armagh (Armagh)	312,767	108,815
Belfast Co. Bor.	15,259	438,086
Down (Down patrick)	609,057	210,687
Fermanagh (Luniskillen)	417,912	51,569
Londonderry (Londonderry)	512,580	94,921
Londonderry Co. Bor.	2,198	47,813
Tyrone (Omagh)	779,518	127,861
Total for N Ireland	3,552,211	1,279,744

**Physical Geography**—There are no dominating mt ranges in I but there are detached groups of mts generally reaching from the coast inland. The highest elevation is some 3000 ft, while the average height of the ls is about 400 ft. The chief ranges are the Mourne in co. Down (with as highest peak Slieve Donard (2796 ft), the Wicklow Mts (Lugnaquilla, 3039 ft), the Deriveagh Mts in the N.W. (Errigal 2466 ft), the Sperrins in the N. (Sawell 2240 ft), the Macgillycuddy Reeks in Kerry (Carraun 3414 ft), the Galtees of Limerick, and the Slieve Bloom the Knockmealdown (2609 ft) and Comeragh Mts (2470 ft) in Waterford, and the Twelve Pins of Connemara (2691 ft) and the low groups of Sligo and Galway. The central part of I consists of a wide plain about 250 ft in elevation, in which are many morasses. The largest of these is the Bog of Allen in Leinster. They are not unhealthy, and produce large quantities of peat, which is used by the inhab for fuel. The lakes of I (called loughs) form an important feature of its geography. Those lying in the centre are Derravaragh, Llanell, and Owel, the R. Shannon flows through Allen Rees, and Derg, Neagh, the largest (100,000 ac), and Erne are in Ulster, to the N.W. the Melvin, Gill, Carr, and Conn, and between the cos Mayo and Galway, the great Loughs Mask and Corrib. The Lakes of Killarney in Munster are renowned for their beautiful setting.

I. is watered by many rivers. The chief is the Shannon, the largest riv. in the United Kingdom. It rises in co. Cavan and flows in a S.W. direction into the Atlantic Ocean. The rivers flowing to the W. are for the most part short and rapid and of little use for navigation, the only other important one is the Erne, which empties itself into Donegal Bay. Along the E. coast the prin rivers are the Slaney, flowing from the Wicklow Mts. into Wex-

ford harbour, the Avoca, the Liffey, rising in Wicklow and flowing northwards to Dublin Bay, the Boyne draining the central plain, and passing through co. Meath into Drogheda Bay, and the Lagan, rising in co. Down and discharging into Belfast Lough. The rivers of the N. are the Brun and the Foyle, the former draining Lough Neagh and the latter emptying itself and the waters of its many small tribs into Lough Lyle. The S.E. coast is watered by the Nore Barrow and Suir, which unite in Waterford harbour. Other important rivers of the S. coast are the Blackwater, rising in Kerry and flowing in an easterly direction to Cappoquin, where it suddenly turns S. into Youghal harbour, the Lee, flowing through Cork into Cork harbour, and the Brandon, which empties itself into Kinsale harbour.

The coast line of the N.W. and S. is very much broken up with inlets, loughs, and rivers. The N. coast of Antrim and Londonderry consists of sheer cliffs, with many regular columns of basaltic formation including those known as the famous Giant's Causeway. The chief inlets of the N. are Loughs Foyle and Swilly, and on the S.W. the bays of Donegal and Sligo. From Malin Head the most northerly point westwards and southwards, the coast is fringed with many small is., the chief of Ulster being Forys Is. and Arran Is. The border close upon the sea down to the W. coast giving a rugged and wild appearance. The largest inlets of the W. are (from N. to S.) Killybegs Bay, Killybegs Bay, the mouth of the Shannon, Dingle Bay and the mouth of the Liffey, and Bantry Bay. From N. to S. are the is. of Inishkeena, Achill, Arran, and Valentia. The S. coast not so much fringed as the N. and W. contains the fine harbours of Cork and Waterford. The E. coast is still more uniform in character but is broken by Wexford harbour, Dublin Bay, Dundalk Bay, Carlingford Lough, Dundrum Bay, Strangford Lough, and Belfast Lough. To the N. lies Rathlin Is. in the N. Channel.

**Agriculture**—The soil of I. is rich and eminently suited to tillage, but political troubles have retarded agric. development. The number of small holdings allotted has been inordinately large and the average size of each extremely small. Moreover, the excessive moisture of the atmosphere in the S. and W. region is detrimental to the cultivation of cereal crops. In 1899 a report of agriculture was published whose duties include the provision of agric. instruction, as well as administrative work with regard to the improvement of live stock. Much of the land formerly used for tillage has been withdrawn gradually during the fifty years 1880-1930 for pasturage. The cause has been attributed largely to the emigration of the poorer classes resulting in a dearth of labour, but in more recent years there has been a strong effort to increase the area under tillage. The chief green crops grown are potatoes, turnips, carrots, mangel wurzel, beet, cabbage, etc. and the cereal crops include barley, oats, and wheat, and flax is grown in large quantities in Ulster. With

the increase of pasturage, there has been a much larger return of live stock with a smaller output of agric. produce.

Agric. policy in Eire has fluctuated in the past seventeen years. Until 1932 when the de Valera Gov. took office, the policy was to specialise in the production of live-stock and live-stock products. The area under corn crops declined from a maximum of 1,156,000 ac. in 1918 to 760,000 in 1932. But the output of starch tons of corn, root and green crops, and hay fell only from 2,761,000 tons in 1918 to 2,410,000 in 1931. Meanwhile the area under grass had increased as the area under the plough diminished. In 1932 the official policy was to speed the plough at all costs and encourage, by a system of guaranteed prices and import restrictions, the growing of food crops for domestic consumption, especially wheat and beet. But total agric. output, after a temporary spurt, began to show a downward trend and in 1938 was only 98 per cent of its volume in 1929. In the late 1930's the gov. found that its effort to promote a tillage economy, based on a declining animal husbandry, was disintegrating Eire's national economy as a whole and destroying its natural fertility of the soil. But the outbreak of the Second World War made it impossible to apply the lessons learnt. Eire was compelled by external circumstances to plough up an increasing acreage of pasture land in order to obtain a grain supply, the total of which failed to increase in equal proportion and was always inadequate. A million ac. of pasture land were sacrificed in the process. Inevitably the output of milk and cattle suffered. In 1929-1930 Eire exported 51.4 per cent of total agric. output, consisting almost entirely of live stock and live stock products. In 1942-43 the percentage exported was only 23.5 per cent. In 1942 a committee was appointed to report on the measures best calculated to provide for the agric. industry at the end of the emergency period. The majority report of the committee, pub. in 1945, recommended a policy of 'ley farming, a blend of 'plough speeding' and live-stock specialisation ideologies, and there is now substantial agreement between the gov. and opposition parties on this policy. Meanwhile the new grass policy is rapidly increasing the output of grass, fresh and preserved, and it seems likely that there will not be enough cattle to eat it all. Hay being the traditional method of preserving grass for winter keep, silage making is rapidly gaining ground. Mechanisation in Eire is making progress. Until 1939 Irish agriculture was comparatively little mechanised and until 1932 hardly at all. In 1939 there were 2067 tractors available; in 1948 there were 9781 tractors, and the number is rapidly growing. A number of creameries in the S. of I. have bought farms which they run on a commercial basis. They equip them in the most modern way and the machines they own can be hired out to members as well as used on the common farm.

Horses, cattle, sheep, and swine are bred

with great success, and during recent years there has been a marked improvement in the purity of the breeds raised. The fisheries form an important industry of the Irish people. In Eire in 1946, 3 steam vessels, 576 motor, 761 sail, and 2120 row boats were employed in the trade. The total crews amounted to 10,162 men and boys in 1945. Mackerel, hake, herring, sole, cod, lobsters, and oysters are among the fish caught and sold. There is, too, a good deal of roe- and line-fishing in the rivers, and salmon and trout are caught in large quantities.

About twenty-one species of mammals that occur in Great Britain are unknown in I. The mole, weasel, and pole-cat are unknown, and the only kind of reptile found is the lizard. The blue hare is indigenous, and frogs and toads are very common. It is probable that I. was isolated before the complete European fauna was able to enter it from the E. The flora of the S. region includes some Pyrenean types that are not found in Great Britain.

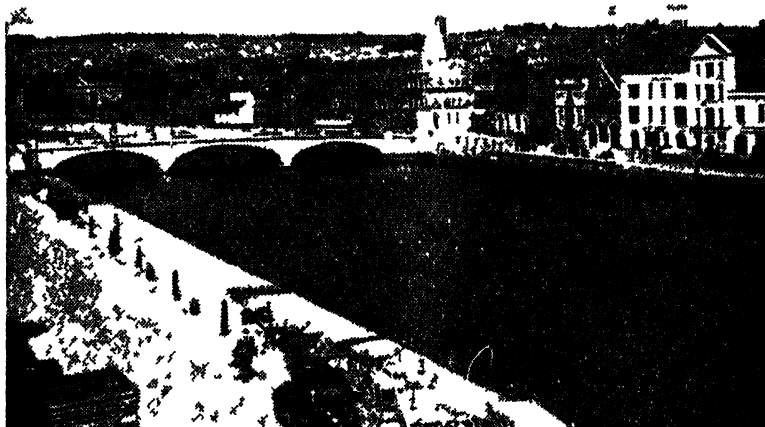
The mineral produce of I. is small when compared with that of Great Britain. Coal is mined near Lough Allen and at Cool Is. in co. Tyrone. Black marble is quarried in counties Galway and Kilkenny and red marble near Cork. Salt is made, being raised from the Triassic beds near Carrickfergus, and barytes, pyrites, and lead ore are also produced. Other minerals are limestone, which is chiefly found in co. Roscommon, iron ore, sand, clay, bauxite, and green Connemara marble.

Manufactures flourish chiefly in the N.E. of Ulster. The most important seat of the linen industry is Belfast, where it was introduced by Strafford in 1633. That town also employs about 40,000 men in engineering and shipbuilding. The woollen industry, which at one time was in a very flourishing condition, was later hampered by restrictions imposed by the Brit. Parliament. Other industries are brewing and distilling, embroidery, hand lace work, and other home industries. The chief exports are all kinds of agric. produce, live stock, fish, and linen.

Communications.—The 1st railway was opened in 1831, and ran between Dublin and Kingstown, a distance of 6 m. There are 741 m. of railway in N. I. and 284 m. in the Republic. The canals are very important for commercial purposes. The chief are the Grand and Royal, 208 and 96 m. long respectively, which afford communication between Dublin and the Shannon; and the Ulster Canal which connects Lough Neagh with the Shannon. There are 180 m. of canals in N. I. and in the Republic 650 m. of inland waterways. There are mail steamship services between Dublin and Holyhead; Belfast and Heysham, Fleetwood, Liverpool, and Ardrossan; Larne and Stranraer; Rosslare (also Waterford) and Fishguard. Many Amers call at Cobh (Queenstown) for Cork on the S., and others at Belfast, Londonderry or Moville on the N. The coasting trade is very active. Shannon Airport (*Íteannna*), 15 m. W. of Limerick, is an

important land plane junction on the main transatlantic air route, catering for traffic to and from the U.S.A., Canada, Great Britain and the Continent. A daily service to and from Dublin is operated. Dublin airport situated at Collinstown, 4 m N of Dublin, serves the cross Channel and European services operated by *Aer Lingus* (Irish Airlines Ltd) and

(Trinity College) was incorporated in 1591, and is the most important in I. It has now opened its degrees to women. The other univs are the National Univ of I at Dublin, the (Rom) Catholic Univ of I at Dublin, the univs of Cork and Galway, the General Assembly's College, Belfast and Magee College, Londonderry (both Presbyterian) and the Rom



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continental airlines. The following private aerodromes are also licensed: Weston Airport 9 m W of Dublin, Dunmore East, 10 m S E of Waterford, Coonagh, 2 m W of Limerick, Oranmore, 5 m E of Galway, Manor Kilbride, 16 m S W of Dublin.

**Education**—In N I there are 1727 elementary schools, 75 secondary schools, 60 technical schools, and one university, Queen's University, Belfast. In Ire there are 5212 elementary schools (elementary education is free and is given in the national schools and, since 1922 the Irish language has been included as an essential part of the curriculum for all national schools). There are 329 recognised and state inspected secondary schools, all receiving grants from the State, and open to inspection by the Education Dept. Technical schools exist in all the prin tns. The Univ of Dublin

(Catholic colleges at Maynooth, Blackrock, Clonliffe, Carlow, etc.

**History**—The earliest hist of I is not unnaturally wrapped up in myth and legend. We have little evidence in any authors of note regarding I, and factors which contribute greatly to the hist of other nations are lacking here, hence we are compelled by the little we have to rely upon the probabilities suggested by research. Evidence of the inhabitation of I by Neolithic peoples indicates that even after the Celtic settlement of I great numbers of the earlier inhab survived, and intermarriage between the Celtic and pre-Celtic tribes took place to an even greater extent than was customary in other lands settled by Celts. The first Celtic settlement of Goldels occurred during the sixth century B.C., and about three centuries later we find a further Celtic settlement of Brythones. Ptolemy,

who gives us our earliest knowledge of I., states the names of at least sixteen tribes. These names bear a striking resemblance to the tribal names of the Celts in Britain, e.g. we find the name Brigantes in both countries. The div. of the country into Ulster, Munster (E. and W.), Leinster, and Connaught—seems to have been made by the earliest Celtic settlers.

By the beginning of the Christian era we may say that I. was populated by Celts (Goidels and Brythones), together with a sprinkling of the Neolithic people and some Picts, who probably came from Scotland, and who occupied but a small portion of the country. Such is the explanation that hist. gives of the early settlement of I. The Irish, however, account for it in a very different way—a series of legendary stories, in which mythical characters, who have become almost historical, play an important part. According to legend, the first invaders came under Partholau, occupied the is. for 300 years, and were then killed off by a great plague. They were followed by the Nemedians, who came from Scythia and had a great struggle with the Fomorians. The Fomorians were ultimately successful and the Nemedians were driven out and went away to Greece. From hence, after various adventures they returned to I., this time being given the name of Firbolgs, and this tribe settled in I. and have been held to be represented there down to the sixteenth century. The next set of invaders were the tribes of the God Dann, who finally overthrew both the Firbolgs and the Fomorians. The tribes of the God Dann are supposed to have come originally from Greece but to have been driven up to Scandinavia, and from thence to have invaded I.; they held supreme command of I. down to the time of the arrival of the Milesians. The Milesians are supposed to have come originally from Scythia, to have sojourned in Egypt, and to have finally invaded I. and conquered it. This myth is historically the most important since the Milesians are held by historians of the sixteenth century to have given the line of the high kings to I. down to the twelfth century. Names are given to the early kings and records of their deeds were kept, but of these we may take little or no notice until the appearance at the end of the fourth and beginning of the fifth centuries of Niall of the Nine Hostages. He is held to have finally set up the central kingdom of Tara, and to have led expeditions of the Irish overseas. It has not yet been fully recognised to what an extent I. and Wales were connected during this early period, and it must be pointed out here that the expeditions of Niall of the Nine Hostages synchronise with the departure of the Romans, and the raids of the Picts and Scots into Britain. Certain it is that colonies of the Irish were formed in Wales and in W. Wales (Devon and Cornwall), and it is to this period in Irish hist. that we can best trace the foundation of these colonies.

The foundation of Emania, c. 300 B.C., seat of the kings of the line of Ir in the N. is regarded by Tighernach, the famous

historian and abbot of Clonmacnoise in the eleventh century, as heralding the dawn of Irish hist. It may be said, generally, that Irish hist. is reliable as to genealogies and the broad features of the prin. events from the Christian era and that it is fairly reliable, from a remote period, as a guide to such outstanding events as the foundation of Emania and the victory of Labraidhe (Lowry), grandson of Laoghaire over the usurper Coffey at Dinn Iliogh on the Barrow. It is, however, not until the time of Patrick that there are definite political sub-divs. in I. as distinct from the mere supremacy of certain families in various parts of the country. A short time prior to the Christian era the most powerful kings in I. were those who ruled in Emania. Thus to Tuathal is attributed the foundation of the kingdom of Meath and the great dynasty of Tara, which governed the clans of the open plain from the sea to the Shannon and later appointed branches to rule over those of more than half of Ireland. There were two other dynasties the origin of which is assigned to the second century: the Leinster and Munster, whose kings were rivals of Conn, famous grandson of Tuathal; and these three leading dynasties supplied the independent rulers of all parts of I. except Ulaidh (Ulster) for centuries and struggled with each other for the supremacy of the country. Tara reached its zenith in the reign of Cormac MacAirt, a grandson of Conn, who is one of the prin. figures in the copious literature on the exploits of the Fianna or 'Fenians.' The kings of Tara had attained such power in the fourth century that they were then waging war in Britain and even sending military expeditions to the Continent. The Roman dominion was on the wane and the Gaels came over to make common cause with the enslaved Britons and Picts against the Romans. One of the most famous leaders of these expeditious was Niall, king of Tara, whom we have mentioned above, who was eventually slain on the banks of the Loire (A.D. 405). During Niall's reign his two half-brothers Brian and Fiachra estab. themselves in the palace of Cruachan (in Roscommon) and thenceforth the kings of the W. kingdom were chosen exclusively from their descendants. Other new kingdoms were founded in the N.W. near the site of the modern Derry. The state of Oriel was also founded at this time. It had been wrested shortly before the Christian era from the Clanna Rury, the most powerful kings in I. Their sway extended from Ulaidh and in early times spread over nearly all the N. and as far S. as Tallite in Meath; but following the seven years' war between Connor and Maere of Connaught, in alliance with Fergus of the Red Branch, the power of the Clanna Rury steadily declined.

Immediately before the introduction of Christianity we find the permanent estab. of four kingdoms ruled over by the posterity of Conn—Tara, Oirghialla, Aileach, and Cruachan. The normal head of this confederacy is the chief king in Eire, styled High King, a purely nominal title

but implying a superiority which was not recognised by the dynasties of Ulaidh, Laighin, or Calceal (Ulster, Leinster, and Cashel). These seven independent States into which the is. was divided at this time remained—albeit modified under changing conditions—the spheres of political influence in I. until the whole Gaelic fabric was destroyed at the battle of Kinsale in 1603; but to trace the fortunes of these seven dynasties is the purpose of any hist. of Gaelic Ireland. Their supremacy in their own kingdoms remained permanent and the rivalries which often convulsed them were between competitors of their own families. It is possible that Christianity conducted to this political stability. The traditional Five Provinces (Ulaidh, Connacht, Laighin, and the two Munhals) are popularly supposed to be represented by the modern four provs.; but the representation is not wholly accurate. The first div. into four provs. was eccles. when the Synod of Kells (1152) grouped the Church around the arch-dioceses of Armagh, Cashel, Tuam, and Dublin. The creation of prov. 'presidents' in the sixteenth century by the Tudors gave them definite recognition in political affairs. The accepted index to the internal political constitution of these Irish states is the 'Book of Rights' (Leabhar na g-Ceart) traditionally ascribed to St. Benignus, disciple and successor of St. Patrick.

The religion of early I. cannot be easily traced. The inhab. appear to have had many gods, in fact, to a certain degree, to have been pantheistic; there is evidence also to show that they were fire worshippers, and we know that right up to the fifteenth century the sacred fire at Kildare was kept burning. The most tangible side of the belief of the early Irish, however, is their undoubting faith in the existence of fairies. The tribes of the God Danu are held, after the invasion by the Milesians, to have disappeared into the hills and to have reappeared as fairies. We have also lists of the names of the Irish gods, but these gods seem to have been very shadowy beings concerning whom little is known. The priests or druids of the country play an important part as teachers, prophets, and wizards. Their powers were great, and it was supposed that they were able to perform miracles. One side of the belief of the Irish must not be overlooked here, since it survived for some very considerable time during the Christian period, and that is the idea that after death certain changes could be made by the dead person, and that he could appear now as a wolf, now as a fish, and again as a bird. Only certain people were held to have this power, but in one case at least it was held that all the inhab. of Ossory could change themselves into wolves at will.

Irish historians aver that the country had reached a high state of civilisation at the coming of St. Patrick. The Irish Milesians are described as a martial and cultured people who, in an age when most of Europe was still in an uncivilised state, held their ollamhs, poets and historians, in equal reverence with their royal chiefs.

Centuries before the Christian era, they are said to have estab. a Fels or central parliament which assembled triennially at the Ard Righ's or High King's court on the Hill of Tara. Thither came the Fíles or poets, the Seanchuidhes or chroniclers, the ollamhs or teachers, the Brehons or judges, the druids or priests (considered by some to have been rather magicians and teachers than priests), and the chieftains and kings of the various tribes, to approve or amend the old laws, make new laws, dispense justice, and to record their annals. The laws made in anct. I., known to-day as the Brehon laws were, for that remote period, so wonderfully just, wise, and equitable, as to win the admiration of modern law students. Again, the beautifully wrought brooches and other ornaments of the I. of pagan days, still extant and preserved in Irish museums, reveal their progress in art and refinement in dress.

Some of the Irish are said to have been Christians when St. Patrick arrived in 432, but it is a fallacy to suppose that the country had been partly converted before then. Christianity had already been the official religion of the Rom. Empire for a century, the Irish and Romans had for a long time been in close contact, both commercially and in warfare, there was a constant influx of Brit. slaves and continuous intercourse between the Brit. and the Irish: from all of which it is reasonable to suppose that Christianity was known and practised among the Irish before the coming of St. Patrick. Some of the Irish saints, such as Ailbe of Enny, Declan of Ardmore and others, are said to have been Christians when St. Patrick came, and to have submitted to him. But the number of Christians in I. then must have been small, and there was no organised Christian church before the time of St. Patrick. The relations between I. and Britain were very intimate. A Brit. Christian Church had certainly been founded long before this date. The growth of Pelagianism in Britain had, before the end of the fifth century, made it necessary for Rome to send missionaries to stamp out the heresy, and one of these missionaries, Palladius, was certainly sent to I. Christianity, however, whilst probably well known in the S., had made little progress in the N. and W., hence it was to these parts that Patrick gave his own personal attention. He himself, born in Britain, had been enslaved and had spent seven years of early manhood amongst the Irish, hence he was familiar with their language and customs (see PATRICK, St.). He took with him at least two followers who spent their time in the S., spreading the gospel and organising the churches. Patrick took for himself those parts which had been touched but little by the Christian faith. His success was great, but has probably been overrated; in any case he found great opposition; he allowed numberless practices which did not actually run counter to the doctrines of Christianity, but which had been accepted by the Irish in pre-Christian days. The system of society made it essential that

he should convert the heads of the tribes before the faith was accepted by the tribespeople, and he succeeded in establishing a system by which native Irishmen became priests and in turn converted their brethren. Schools and churches were erected, and the see of Armagh estab. I. in this way became definitely connected with the W. Church. Bishops were consecrated, the land divided into dioceses which probably coincided with tribal divs., and the Church definitely estab. throughout the land. The Church was, however, during the centuries which followed, to adopt a very different system from that set up by Patrick. The Irish Church has to a very great extent been regarded as a monastic church, but this was certainly not the system set up by St. Patrick. The Church was founded on practically a personal basis, religious colonies originating from one centre became and remained daughter settlements of the parent body. The head of a religious foundation was the possessor both of spiritual and temporal rights, and frequently it came to pass that the headship of a religious foundation passed entirely into lay hands.

The monastic system was early introduced into I., although it was not until Christianity had gained a firm hold on the country that the form usually associated with I. appeared. The earlier type seems to have been somewhat loose and to have led to much disorder. Further, the Irish bishops did not have any territorial jurisdiction and the consequence was that the number of bishops was very large. Each tuath, or tribe, had, however, a bishop who was recognised as an official member of the tribe and who had a considerable amount of influence and power. Judged by the standards of W. Europe the Church in I. was morally somewhat lax, but this was probably due as much to the struggle between the old and new religions as to anything else. Finlan was the founder of the famous monastery at Clonard which was the beginning of the foundation of that series of monasteries which made I. the centre of learning for W. Europe. Scholars flocked to these monasteries, which were simply encampments of students, i.e. a series of mud huts built by the students themselves. Here they lived and provided themselves with food by their own labour, and received also their learning in the open air. These monastic settlements were conducted on lines very much more severe than the earlier had been. The monks were shut off entirely from the laity, and the sexes were separated. This monastic movement seems also to have been accompanied by much missionary enterprise. Missionaries of the Celtic Church went everywhere—Columba to Iona, Aidan to Northumbria, Columbanus to W. Europe. In the Orkneys the Celtic Church was estab., and Iceland, when discovered by the Vikings, was found to have been visited previously by missionaries of the Celtic Church. The Saxon kingdoms in the N. and centre of England owed their conversion to Irish missionaries from Iona. St. Aidan became the first bishop of North-

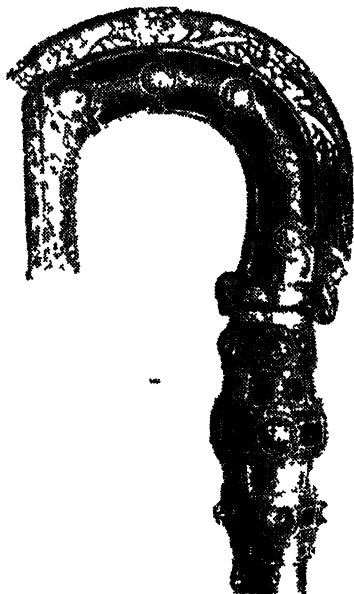
umbria and was succeeded in Lindisfarne by two other Irish monks. The Irish missionaries had brought learning as well as religion, and Northumbria became the cradle of Anglo-Saxon literature. The greatest of the Irish missionaries to Europe was St. Columbanus, a native of Leinster, who laboured for twenty years in Burgundy. Numerous sermons, letters and poems written by him are extant and testify not only to his wide range of knowledge, but also to the high state of learning in the Irish schools where he acquired it. The Irish missionaries soon found themselves in opposition to those of Rome. The Roman tonsure had probably been introduced into I. by St. Patrick, but the Irish had certainly gone back to the old druidic tonsure, whilst on the matter of calculating Easter they had remained true to the Jewish method. The following were the more celebrated saints of I. and the schools with which most of them were connected: St. Benignus, a native of Meath, favourite disciple of St. Patrick and his successor as Archbishop of Ar-famous convent in I., at Kildare; St. Charan, of Meath, who founded the monastery and school of Clonmacnoise on the Shannon, in which many important Irish annals were compiled; St. Brendan, who founded the monastery of Clonfert; St. Finlan, of Moville, who founded the school of Moville (near Newtownards); St. Comhgall a native of Ulaidh, who founded in that dist. the monastery of Bangor, whose fame rivalled that of Clonard and in which many of the Irish missionaries were educated; and St. Carthach, of W. Munster, who founded the famous school at Lismore. The few prominent names mentioned here represent but a small part of the work for Christianity performed in Europe by Irish zeal. Most of it was done by unknown monks in the many monasteries scattered over W. and Central Europe. These were continually being recruited by monks from I., who for ages continued the labours of St. Columbanus and St. Gall. Irish influence on the Continent was the result of no transient effort, but was due to a great movement which endured for six centuries, from the sixth to the twelfth.

From the fourth to the eighth century the political hist. of I. is a long story of relentless and practically uninterrupted tribal warfare. The descendants of Niall of the Nine Hostages remained ardi of I. down to the beginning of the eleventh century, but were seldom powerful enough to be able to maintain peace in the country. The Church was not strong enough to perform the work of the ardi, and moreover, the personal character of Church gov. made the Church often a party to the quarrels of the tribes. The descendants of Niall of the Nine Hostages were divided into two great branches, the S. Hy Niall and the N. Hy Niall. At the beginning of the sixth century the Scots from Dalriada made their settlement in Argyllshire, and ultimately, after strenuous struggles, obtained the crown of a more or less united Scotland (see SCOTLAND—History). About the middle of

the same century Tara ceased to be the residence of the ardrí, many legends being connected with the desertion of this centre. The records tell us only of constant wars, constant successions, and short reigns. The country was in a state of anarchy. One event alone needs to be mentioned, the attempt to rule Dalriada (Argyllshire) as a subject kingdom of the ardrí of I., this attempt, however, was given up. The position of the ardrí was unenviable. He could command no real allegiance save that of his own immediate tribe. The army of I. consisted of the tribes commanded by their own chiefs. The chiefs owed allegiance to the ardrí, but allegiance of such a shadowy type that it counted for nothing. Such was the state of I. when the Vikings began a series of raids which developed into a settlement.

The first invasion of the Norsemen occurred towards the end of the eighth century. The Norwegians were the first to come, and, aided later by the Danes, made settlements on the E. coast. Irish writers distinguish between the natives of the two countries: the earlier who came from Norway, are called *Fionn gall* ('White Foreigners') and '*Lochlann*', the *Dub gall* ('Black Strangers') or '*Danars*' came later from Denmark. The distinction between them is, however, not clearly marked and they are often confused. In popular language the invaders are collectively known as the Danes, while Eng. writers make reference to them as the Norse, or Vikings, or Ostmen. The domination of I. by the invaders for over a century was not altogether a misfortune, since it brought that country into closer contact with the countries of the Continent and with W. civilisation. Many of the Irish tribes fought in the armies of the Danes who invaded England. Foreign trade, especially with Scandinavia, flourished. After the middle of the tenth century there rose to fame in Ireland the great Brian Boru, a Dalcais prince who defeated the Danes and forced them into the position of a subject race. After bitter struggles with the reigning dynasty Brian managed in 1002 to become ardrí himself, and during the twelve remaining years of his life he ruled a peaceful and prosperous I. He strengthened justice, he made good laws, and he built schools. But he had still to face the hostility of the Danes and the jealousy of the Irish chieftains. In 1014 was fought the famous battle of Clontarf, which again broke the power of the Danes, but in which Brian himself was killed. His death was a serious blow to monarchy in I. and led in the century or more following his death to the weakening of the central power and internecine strife. The hist. of I. from the battle of Clontarf to the Anglo-Norman invasion is the record of continual strife, between the O'Briens of Munster, the O'Neills of Ulster, and the O'Connors of Connaught for the ardríship of Ireland. The relations with England during this period were not intimate, but were nevertheless, usually fairly cordial. The question of the Church in I.

was one which perplexed the Eng. primates during the Norman period. Neither were the relations between the Irish Church and Rome intimate, although in the matter of Easter and the tonsure the Irish Church had conformed to the usages of Rome. Dublin was regarded as an Eng. diocese under Canterbury, and from this beginning the Eng. primates had hoped to bring the whole I. into their fold. The synod of Kells of 1152 divided I. finally into dioceses, did much to abolish the anarchic state of Church gov., and made Armagh the seat of the primacy.



National Museum, Dublin

#### THE TISMORE CROZIER

An outstanding example of medieval Irish art believed to date from the twelfth century. The staff is of yew and the crook is of bronze, with bosses of coloured enamel. Tismore was the site of a monastery founded by St. Carthagh in 633.

The Irish Church, was, however, still vigorous enough to produce from its own ranks devoted clerics capable of effecting reforms. Most conspicuous in this work was St. Malachy O'Moynai (d. 1094), abbot of the monastery of Bangor. Having partially restored the famous school he was made bishop of 'Connor' (or Dal Riada) and by much toil revived



religion there. He set before himself the carrying out of two reforms in particular: the first of these was the organisation of definite dioceses. This work of reform and organisation, begun 40 years previously by Gilbert, bishop of the Norse of Limerick, and Celsus, bishop of Armagh, and carried on by Malachy, was completed at the Synod of Kells. A National Church arose, and the unity of the Church in I. was clearly estab. under one recognised head but with full recognition too for the various constituent elements. The other great reform to which Malachy devoted himself was the revival of the monasteries. Most of the early monastic institutions in I. were independent bodies, the Columban monasteries being the sole instance of an affiliated Order. The strict discipline of these rules had been relaxed and Malachy resolved to restore it. The Canons Regular and the Cistercians, who practised the severe discipline estab by the Irish missionaries in Europe, were employed by Malachy to restore the old monastic spirit in I. and for that purpose he brought communities from the Continent and sent Irish students to be trained in European monasteries. The Irish had, between the fourteenth and twelfth centuries, advanced but little so far as their social conditions were concerned. A species of feudalism had grown up, but the tribal system and the Brehon law remained in existence. When Henry II. succeeded to the Eng. throne he had already planned the conquest of I. Pope Adrian IV. had given his sanction to the idea, and had desired the conquest as a means of bringing the Irish Church into closer contact with Rome. In 1166 Dermot Macmurragh, exiled from I. because of his tyranny, and also because of the hatred he had roused by carrying off the wife of the chieftain of Breffni, arrived in Aquitaine and asked for help from Henry II. The king was at that time too much occupied with other affairs to attend to Irish matters himself, but he gave Dermot permission to raise forces from amongst his Lords of the Marches. Dermot applied to Richard de Clare, earl of Pembroke (usually called Strongbow), and by promising him the hand of his daughter and the ultimate possession of his kingdom, induced that earl, whose fortunes were not at their highest level, to help him. Strongbow did not cross over until 1170, but Fitz-Stephen and Fitz-Maurice crossed with a small company of men in 1169, and began the Anglo-Norman conquest of I.

It is impossible to follow here the fortunes of the first adventurers; suffice it to say that by their superior skill and their united efforts they restored Dermot and paved the way for the overlordship of Henry II. which that king estab. when he visited I. in 1172. The kings of I. were forced to acknowledge Henry as their overlord, the country was placed under the administration of a Norman governor, the barons who had fought in I. were granted Irish lands, and the Irish Church was brought by the synod of Cashel into complete union with the Church of Rome. The Irish were, however, allowed to retain

their old Brehon law, and the Anglo-Normans were left to maintain themselves in their dominions as best they could. The hist. of I. for some time after this date is the record of continuous strife between the Norman barons attempting to extend their power and the Irish attempting to retain their customs, laws, and civilisation. The conquered ter. was known as the Pale, and the whole of I. was ruled nominally by a Norman governor. John was made Lord of I. in 1185, but soon made himself hated, as he was later in England. The real rulers of the land were the De Lacys, who had been granted huge ters. by Henry II., and who, by subjugating their land, introduced those great Norman families who have played such an important part in the hist. of I. During John's reign, however, Eng. power increased, as it did also under Richard Strongbow and during the reign of Henry III. The reign of Edward I. saw the power of the colonists still on the increase to such an extent that they were able to help Edward in his wars with Scotland; but although in Connaught and in Ulster the power of the Eng. was still increasing, nevertheless the Celtic tribes were not yet utterly beaten. During the reign of Edward II. Edward Bruce tried to conquer the is. and to drive the Eng. out, but after sev. futile victories he was finally overcome and slain at the battle of Dundalk. The reign of Edward III. witnessed the passing of the Statute of Kilkenny, which forbade the inter-marriage of the Eng. and the Irish; it also saw the creation of the earldoms of Desmond and Ormonde, added to that of Kildare. Richard II. led two expeditions to I., with both of which he did little good; the Celtic reaction was strong and was strengthened by the Anglo-Irish baronage. One of the main results of Richard's second Irish expedition was that it allowed time for the house of Lancaster to usurp his throne. The period of Lancastrian rule was one of extreme misery for I. Henry IV. could do little, Henry V. was too busily occupied elsewhere to turn his attention to I., whilst Henry VI.'s regents did very little indeed. Richard of York was made governor of I. in 1449 for ten years. He ingratiated himself with all parties and became extremely popular. Edward IV.'s reign was remarkable for nothing save its lawlessness and the fact that Tiptoft, earl of Worcester, became governor of the is. and was responsible for much bloodshed. During the reign of Henry VII. was passed the famous Poyning's law, which gave control of the Irish legislature to the Eng. council, and was responsible for much contention at a later date. The earl of Kildare espoused the cause of Lambert Simnel in 1487, but certain of the Irish, and in particular the tn. of Waterford, were strong supporters of the Tudors. Henry VIII. did not turn his attention to I. until fairly late in his reign. By this time the Anglo-Irish families were Irish in almost every respect. They no longer acknowledged any law save that of the tribal system of ant. I. But the king struck with a heavy hand, the power of

the house of Kildare was broken, and the country was slowly rescued from the hands of the feudal lords. Henry himself adopted the title of king of I., and the Irish were gradually brought to look to the power of the crown for the redress of their grievances. The native chieftains were also granted titles from the crown and were encouraged to come to court as often as possible. The reign of Edward VI. saw the beginning of the attempt to introduce Protestantism into I. The attempt was a failure, although it was supported by those in authority. The sincere Catholicism of the people was only too evident, and Mary had no difficulty in restoring the old faith, but the monastic lands which had been seized were not given back, and in fact Protestants from England found in Dublin during Mary's short reign a place of refuge from persecution.

We may revert here to a consideration of the hist. of the progress of the Reformation in I. in the Tudor period. Henry VIII.'s doctrine of his eccles. supremacy received little support in I., where there was no desire for religious innovations. In 1535 Henry appointed a commission to initiate the enforcement in I. of the Reformation. At its head was George Browne, an Eng. Augustinian friar, who had been chosen archbishop of Dublin by the king and consecrated for that office by Cranmer, archbishop of Canterbury, without any authority from the Pope. But the new archbishop secured only the support of the bishop of Meath, and he quarrelled violently with the deputy viceroy, Lord Leonard Grey. In 1536 a parliament, assembled in Dublin, was required to pass 'the Act of the Supreme Head' providing severe penalties for those who obstinately refused to acknowledge the king to be head of the whole church in I. By another Act, 'first fruits' of eccles. offices were to be paid, not to the pope, but to the king. Henry's next step was to undertake the dissolution of the Irish monasteries and convents. There were in I. about 600 religious houses, including seventy convents. By the end of 1535 almost all those in Leinster, most of those in Munster, and some in Connaught had been suppressed. In Ulster and in remote parts of Connaught and Munster, however, monasteries continued to exist till the early seventeenth century. The pretext advanced for the suppression was that they were the abodes of idolatry and superstition, whereas, in fact, the religious houses of I. had performed a number of indispensable social services for the people, including education and hospitals. The dissolution was accompanied, in several cases, by violence and bloodshed and many religious suffered imprisonment and even death for their refusal to adhere to the doctrine of the royal supremacy. In 1539 another commission was set up to find and destroy relics and to transfer images and valuable ornaments, such as golden chalices, to the king's use. Browne then tried to evangelise the more distant parts of his archdiocese, and in the result the Irish privy council asserted that 8 bishops and

2 archbishops came before them in Clonmel to take the required oath. But of bishops of papal creation, only 5 'conformed' and these were deposed for heresy by the Pope. Of the lower clergy few within the Pale took the supremacy oath and scarcely any outside it. Outwardly I. might conform to the reformed doctrine, but at this period it was the practice in the country to enter into engagements without any intention of carrying them out.

When Mary II. Elizabeth, a champion of the Reformation, but one devoid of religious zeal, intended that the State Church of England should exercise sway over I. too. In 1606 she directed the Irish Parliament to pass two important Acts, the Act of Supremacy, declaring her supreme governor, both in eccles. and spiritual and in temporal matters, and denying Papal jurisdiction, and the Act of Uniformity requiring the use of a reformed Prayer Book at public worship. But this religious legislation was far from being strictly enforced anywhere in I. and in a great part of the country it was impossible to enforce it. Even where the authority of the Eng. gov. was effective the queen was careful not to provoke hostility or even rebellion by too great severity. But this moderation was not due either to humanity or to weakness on her part. Throughout her reign she directed her Irish policy to the political subjugation of I. and its reduction to uniformity with England not only in religion, but also in speech and social customs. Resistance to this policy led to persecution of the Catholics. The realisation, at length, in I. that the Reformed doctrines were closely linked with the imposition of foreign rule proved, in deed, to be a cohesive influence among the people, who hitherto, far from revealing that love of country as a whole which to day is styled Nationalism, had fought and died mainly in the interests of clan conflict. But now, under the goad of foreign rule, a broader patriotism grew up through the stimulus of the threat to Catholicism. Elizabeth found, therefore, in I. for her religious policy many zealous adversaries, while her supporters numbered only the few, whose private interests rather than zeal for the policy, induced them to 'conform.' The bishops and priests who refused the Oath of Supremacy were generally deprived of their sees and livings and superseded by Englishmen or Irishmen of more pliant dispositions. But the wretched stipends of the sees and livings were not likely to attract men who could hope for eccles. preferment in their own country. In consequence the churches were neglected and suffered to fall into ruins, and in many places no parochial duty was done. In the parts of the country, however, where the authority of the Eng. gov. was as yet only nominal, conditions were better, especially before the Desmond insurrection had devastated the S. and the O'Neill was ruined the prosperity of Ulster.

With the accession of Queen Elizabeth the State Church was restored in I., but

the most noteworthy events in Irish hist. during this period are the O'Neill and later the Geraldine rebellions. Shane O'Neill had been elected chieftain by his tribe and claimed the earldom of Tyrone, which had passed to a bastard brother, Brian O'Neill. The Eng. supported the claim of Brian, but Shane was able to keep up a continual contest with the crown until finally, in 1567, he was killed.

The crushing of the Shane O'Neill rebellion was followed in I. by a great religious revival. The counter Reformation, which was doing so much to restore Catholicism on the Continent, worked with tremendous rapidity in I., influenced and helped to a very great extent by Jesuit priests. The immediate outcome of this religious revival was the Geraldine rebellions. The second of these led by Earl Desmond, was only put down after four years' continual struggle. The Irish were helped during this period (1579-83) by the Spaniards and the Itals, and were crushed finally with great cruelty. The rebellion had been practically confined to Munster, which was finally subdued by huge confiscations and Eng. settlements; amongst the settlers were the poet Spenser and the adventurer Raleigh. The final rebellion during Queen Elizabeth's reign broke out in 1595 under O'Neill, Earl of Tyrone. Essex, sent to quell it, made terms with its leader and returned home; but Mountjoy, by means of a series of fortresses from which he ravaged and laid waste the land, finally conquered it (1603). Tyrone admitted defeat, and was allowed to keep his lands and title. The wars in I. had of a necessity been barbarous ones, both because the Eng. unjustifiably regarded the Irish as savages and also because I. was struggling for all that England held in greatest hate—Catholicism and the friendship of Spain. The atrocities of the time, equally ferocious on both sides, cannot be palliated, but are perhaps more easily understood. The system of plantations was developed during the reign of James I. The lands of the Earls of Tyrone and Tyrconnel were confiscated, and Ulster was settled chiefly by Presbyterians, although lands were also granted to the City of London. The administration of Strafford is the most important event of the early part of Charles I.'s reign. He promoted industry, law, and order; he restored the country to something approaching prosperity, but his order was the order of repression, his discipline the discipline of the iron hand. His worst and most unjust work was the attempt to 'settle' Connaught, but before he could carry out that work he was recalled to help Charles in England (1640). The great Irish rebellion broke out in 1641, inspired both by hatred of the rule of Strafford and by the fear of what would happen under Puritan rule. Undoubtedly thousands of Protestants perished, although in a number of cases the figures have been grossly exaggerated. The situation was complicated by the outbreak of civil war in England, and the Irish sent some help to the king, who was continually intriguing with them. In 1649 the execution of the

king released the parli. troops for service in I., where the young king, Charles II., had been immediately recognised. The methods of Cromwell and Ireton were thorough, and the Irish were crushed altogether. The garrisons of Wexford and Drogheda were massacred, and every priest that the Puritans found was indiscriminately slaughtered. The Cromwellian settlement followed, and huge tracts of land were confiscated. The only merits of Cromwellian rule were the restoration of order and the prosperity which followed a peace of desolation. The Catholic religion was, however, sternly repressed. The Restoration involved the settling of another great land question. The Cromwellian settlement was to a great extent upset, the original owners were restored, and the Cromwellian settlers given compensation in Connaught. The Roman Catholic religion was also given a certain amount of toleration, and for the greater part of the reign Ormonde ruled I. for the Eng. king. The country was on the whole peaceful, but the trade restrictions imposed were rapidly alienating the Irish people still further, and were the cause of considerable trouble at a later period.

The revolution of 1688 was the immediate sign for the outbreak of hostilities between the Catholics and Protestants of the N. of I. Londonderry and Enniskillen were immediately besieged, and the Protestants found themselves hard set to hold their own. Londonderry remained uncaptured, whilst the besieged in Enniskillen broke out and won a victory at Newtown Butler. The siege of Londonderry is memorable for the valour of its inhabs., who held out for nearly four months, repelling every attack and suffering extreme privation and, at the end, stark famine (having eaten all the horses, cats, dogs, rats, mice, tallow, and starch in the tn.) when some Eng. ships broke through the obstructions of the riv. and so raised the siege and saved the tn. Much of the credit for this historic defence was due to a clergyman named George Walker, who had raised a regiment in the Protestant cause. In 1690 was fought the battle of the Boyne, after which James II. left the country and returned to France. Wm. III. also returned to England, and the Irish rebellion was crushed by John Churchill, Duke of Marlborough, assisted by Ginkell, one of Wm.'s Dutch generals. Cork and Kin-a-le fell. Aghrim was won, and finally Sarsfield, after a magnificent defence, surrendered Limerick, and returned to France with his followers to found the famous Irish brigades. The capitulation of Limerick had, in addition to allowing the Irish freedom to enlist in the service of France, also promised toleration for the Catholics to the degree allowed during the reign of Charles II. But the Penal Code passed by a Protestant parliament did not recognise this latter clause. The Code was a series of vindictive anti-Catholic laws, which denied to the Catholics any rights of citizenship and any ownership of property. The Gov. of I. passed into the hands of a Protestant

oligarchy. The great landowners were never in the country and their representatives treated the Irish peasantry with the utmost cruelty. Parliament was in the hands of the great Protestant families and the Church under the control of absentee and usually irreligious bishops. The Irish people were downtrodden, their trade repressed and their land taken from them. Thousands of them emigrated and the flower of the Irish nation served the enemies of England, since England refused to use their services. Towards the

blessing of the age. The United Irishmen were formed, but William promised that which he could not fulfill—Catholic emancipation—and finally the state of Ireland became anarchic. The United Irishmen were sternly repressed and disarmed. Ulster underwent a brutal persecution at the hands of an armed force but was finally disarmed. In 1796 the French invasion under Hoche had failed at Bantry Bay. In 1798 the Irish rebellion broke out to a great extent it was a national rising. The leaders held out for Catholic emancipation and



*Irish hills*

THE GIANT'S CAUSEWAY, CO. ANTRIM

end of the century, however, Catholic repression was lightened, and some concessions in the matter of ownership of land were allowed them. These reforms were the immediate outcome of the American War of Independence. I had to be better treated or there was the possibility of her also breaking away. The principal result of this war, however, was the granting of an independent parliament. The British troops had previously been withdrawn from Ireland for service in America. Irish invasion seemed imminent. The Irish Protestant and Catholic alike, formed a volunteer force to resist invasion. Then gradually they discovered their own power. Led by Henry Grattan and practically under the threat of rebellion they obtained the repeal of Poyning's law after trade restrictions had been withdrawn (1782).

The next important event was the French Revolution, which Catholic and Protestant alike hailed as the greatest

parliamentary reform, and the peasantry were fighting for separation from Great Britain. The battles of New Ross and Vinegar Hill were the only two engagements of importance and both were defeats for the rebels. The Irish landing was a failure, since it came too late and Pitt saw that only union could end such anarchy. But union was distrusted and disliked. It was only at enormous expense and after much bribery by means of honours that it was brought about. Grattan ever a patriot, spoke strongly against it. In 1800, however, the Act of Union was passed and in 1801 it became law. The Irish were to be represented in parliament by twenty-eight Irish peers and four bishops elected for life by the whole of the Irish peerage. One hundred members were to represent Ireland in the House of Commons. I was to pay a certain amount to the British exchequer, was to be given absolute free trade with Great Britain, and was to keep her judicial and

executive systems. Pitt intended the Act of Union to be accompanied by a measure of Catholic emancipation, but the king (George III.) pleaded his coronation oath and refused to hear of it. Finally, rather than break a pledge, understood if not definitely given, Pitt resigned (1801). Rom. Catholics were unable to sit in the House of Commons until 1829, when the Rom. Catholic Emancipation Act was passed permitting them to do so. O'Connell was the great Irish leader of this time. In 1846 the potato crop failed, and famine made conditions terrible in I. About this time I. also began to feel Amer. competition in the corn market. Great Britain adopted Free Trade, and I., with the loss of protection for her wheat, soon found it impossible to compete with America. Measures were introduced attempting to alleviate the suffering of the smallholders, who, in many cases, were evicted by the impoverished land owners, and thousands of Irishmen emigrated to the U.S.A. and Canada. From 1864 to 1911, I. may be seen to change from a land of tillage to one of pasturage. The political unrest was aggravated during these years by the land question. Gladstone brought forward in Parliament two Home Rule Bills, one in 1886 and the other in 1893, but both were rejected. The work of the Irish leader Parnell (q.v.) in consolidating the Irish Home Rule party deserves notice during this period. Again, sev. years later, the Liberal party under Asquith introduced a Bill for Home Rule for I., and in 1914 this Bill received the Royal Assent. But owing to the Great War the operation of the Act was suspended (see HOME RULE). During the First World War many Irishmen volunteered and fought for Great Britain, and John Redmond, the Irish leader, used all his influence to assist the Brit. cause. But trouble between the two countries was still brewing. In 1916 there was a rising in Dublin, and after the war and the death of John Redmond matters grew worse. Secret societies and societies which were perfectly open in their proceedings strove more and more to separate I. from Great Britain. In 1919 an Irish Republic was set up with its own parliament, the first Dail. In 1920 guerrilla warfare began in I. between I. and Great Britain, and a system of reprisals resulted, which was ended by a truce in 1921. In that year a N. I. Parliament was set up in Ulster and later in the year a treaty between Great Britain and I. was signed. In 1922 the Irish Free State was formerly inaugurated. For subsequent hist., see EIRE; and see also GREAT BRITAIN and IRELAND, NORTHERN.

*Irish Literature.*—I., more than any other country in W. Europe, possesses a vast mass of poetry and saga, existing in MSS., much of which has not yet been catalogued, but this is no doubt only a fragment of the whole of anc. Irish literature. The poet Senchan Torpeist, in the *Book of Leinster*, A.D. 1150, laments that the *Cattle Raid of Cooley* and the *Great Skin Book* had been taken to the E., and in many other of these anc. MSS., are similar

references to books that have disappeared. Prior to the writing of MSS., there existed in I. the bardic schools of poetry and, at a later date, the Christian colleges. We find in the many lives of the saints references to these Christian colleges, but little is known of the bardic schools. It is supposed that they were formed round a chosen bardic poet, who was followed from place to place by his disciples. The earliest extant MSS. written in Old Irish date from the eighth century, and are mostly glosses and explanations of book used in Irish church schools. Other Gaelic works in order of antiquity are the *Book of Armagh*, poems contained in the Milan and the St. Gall codices, and the *Martyrology of Angus the Culdee*. Later, from the twelfth to the sixteenth century, follow the books of the Middle Irish period, which includes the *Book of Leinster* and the *Book of Ulster* containing the *Cattle Raid of Cooley*. The Middle Irish books, however, were compiled from poems and sagas of a much earlier date. As Irish literature developed, it concentrated on the writing of romances, and, unlike other Celtic literature, no drama was produced. Stories of cattle raids, battles, courtships, voyages, visions, destructions of places by sword and tempest are the subjects of epic and romance in prose and poetry, which formed the repertoire of the *ollamh* or chief bard. To learn his craft took the bard from nine to twelve years. The introduction of Christianity had little influence on the early romances, which may be divided into the following mythological cycles: the *Cycle of Tuatha De Danann* and the Pre-Milesians, the *Red Branch Cycle*, and the Cycles of Finn Mac Cumhail, Ossian, and Oscar. These romances date from before the eighth century. Following the Norse invasions of the ninth and tenth centuries, literature and art were blotted out, but in the eleventh and twelfth centuries there was a revival in art and learning. It was during this time that the Middle Irish books were compiled, but, owing to Norman interference, the thirteenth century was comparatively barren. The most important poet of this period was the bard Donogh Mor O'Daly (d. 1211), but there are few poets mentioned who belong to this time, and not many poems are extant. During the fourteenth century poetry again flourished, the most important poets being Tadhg Mor O'Higinn (d. 1315) and John Mor O'Dugan (d. 1372). From this time date the compilations of annals and family records, and the profession of poetry became hereditary, noteworthy families being the O'Dalys and the O'Higinns. Fergal O'Daly and Angus O'Daly, the satirist, Tadhg O'Higinn and Dubhthach, son of Lochadh, are celebrated poets of the fifteenth and sixteenth centuries. With the seventeenth century came a revival of Irish literature under the four masters, Seathrún Keating, Father Francis O'Mulloy, Lughaidh O'Clery, and Duaid. These four men were poets, while Mac Firlis was the greatest prose-writer of that time. A later poet was Teig Mac Dalro, but with

the eighteenth century came the downfall of the *ollamhs*, and their poetry became imbued with melancholy, for they were reduced to poverty and found it impossible even to educate themselves. The sorrows of the *ollamhs* are well expressed in the prolific works of David O'Briadar, who is a typical poet of this period. During the end of the nineteenth and the beginning of the twentieth century there was a revival of the Irish language and its literature, and Gaelic became the official language of Eire. Also many Irish dramatists, writing in Eng., have used the ancient Irish myths.

The Irish contribution to Eng. literature has been peculiarly rich in drama, perhaps the most fertile field. Goldsmith, Congreve and Farquhar, Wilde, Shaw, and O'Casey, in poetry Thomas Moore and Yeats, in philosophy William Rowan Hamilton and A. E. (George Russell) in novel writing, Lover and Joyce and in England, James Joyce. During the past quarter of a century this enrichment of English by writers of Irish extraction has continued. These years have seen the achievement by Eire of independence, a decline in the heroic mood and the rise, of a new middle class of traders and civil servants, and it is against this background, with its inevitable disenchantment, that novelist critics such as Frank O'Connor and Sean O'Faolain have written in the past two decades. While Sean O'Casey, the playwright, has made interesting attempts at a fusion of a raw realism with symbolical significance. Mary Lavin with sev. vols. of short stories including *Tales from Beehive Bridge* (1913, Galt Prize) and a novel, has been the sole reminder from a neutral Ireland that the standard of work in fiction set by Frank O'Connor and Sean O'Faolain has not been lost. Her stories have a singing quality, with prose heightened through local idiom to the musical form familiarised by J. M. Synge. Michael McLaverty's fiction is drawn from his experience of the Roman Catholic people of Belfast and vicinity. His last novel *The Three Brothers* (1918) in its even and lyrical prose, is typical of his exactness of vision. Ely in Mac Mahon of Kerry is a young storyteller whose *Lon Famer and Other Stories* (1918) reveals a talent developed in the traditional *shanachie* manner. Michael O'Boine acutely pictures the lower middle class of Dublin. Among poets there has been something in the nature of a reaction to Yeats, whose greatness has somewhat obscured their individuality. The Gaelic influenced poets (writing in Eng.) include Austin Clarke, Robert Barron Padraic Fallon and Donagh MacDonagh. 9 Irish poets using a more typically 'modern' idiom and more concerned with ideas, are Ewart Milne, Valentin McDermott and Geoffrey Taylor. Ulster poets are John Hewitt and W. R. Rodgers whose concern is with the problems and way of living of a distinctive community in Irish drama, Lord and Lady Longford (of the Abbey Theatre), Teresa Deery, Gerard Healey and Walter Macken are among a small group of playwrights who

have abandoned the peasant-life comedy of Synge for the distraction of contemporary life. Noteworthy, also, is the Gate Theatre, Dublin, founded in 1924. For Irish writers who have written in Eng., see further under ENGLISH LITERATURE. See also GAIIC LANGUAGE AND LITERATURE.

Consult W. R. Maxwell, *History of the Irish Rebellion in 1798, with Memoirs of the Union and Emmet's Insurrection in 1803* (illustrations by George Cruikshank) 1846, R. B. O'Brien, *The Life of Charles Stuart Parnell 1846-1891*, 1898, W. E. Wakeman, *A Handbook of Irish Antiquities*, 1900, Alice S. Green, *The Making of Ireland and its Unmaking*, 1908, J. F. Boyle, *The Irish Rebellion of 1916*, 1917, L. Baker, *Irish Land in the Last Fifty Years, 1866-1915*, 1915, M. MacDonagh, *The Home Rule Movement*, 1920, D. A. Chart, *Economic History of Ireland, 1920*, H. M. Henry, *The Revolution of Sinn Féin*, 1920, G. Fletcher (ed.) *The Provinces of Ireland* (3 vols.), 1921-22, R. Dunlop, *Ireland from the Earliest Times to the Present Day* 1922, F. A. Boyd, *Ireland's Literary Renaissance*, 1922, S. Gwynn, *Ireland, 1923 and Ireland, its Places of Beauty, Entertainment and Historic Association*, 1927, Eleanor Hull, *A History of Ireland and her People to the Close of the Tudor Period*, 1926, I. W. Joyce, *Social History of Ancient Ireland*, 1926, D. Gwynn, *Irish Free State, 1922-1927*, 1928, R. A. S. Macalister, *Ancient Ireland a Study in the Sources of Archaeology and History*, 1931, L. Curtis, *A History of Ireland, 1931*, and *Medieval Ireland*, 1935, D. Macaulay, *The Irish Republic, a Documented Chronicle of the Anglo-Irish Conflict*, 1931, Mary Hayden and G. A. Moon, *A Short History of the Irish People*, 1910, S. O'Faolain, *The Irish*, 1918, Kathleen Hoagland (ed.) *1000 Years of Irish Poetry* (anthology) 1915, R. Flower, *The Irish Tradition*, 1918, R. Larratt, *The Course of Irish Verse*, 1918, and H. Shearman, *Anglo-Irish Relations*, 1918.

Ireland, Church in, was founded, according to tradition, by St. Patrick, who has always been regarded as the patron saint of the country, in the fifth century. In the seventh and eighth centuries the Irish Church was one of the most flourishing in Christendom. See IRELAND—History. Despite the outward continuity of the present Church of Ireland with the pre-Reformation Church, it has for centuries been the Church of only a section of the people of whom by far the larger portion remained under papal jurisdiction. The first convocation of the Irish clergy was held in the reign of James I, the Irish articles being drawn up in 1615. These were accepted by the Irish Church in 1834. Their distinctly Calvinistic tone is indicative of the way in which the Church of Ireland has always inclined more in the direction of the advanced reformers than has the Church of England. During the seventeenth century its most important prelates were John Bramhall, Archbishop of Down, and Wm. King, Bishop of Derry. The Act of Union of 1800 linked the Churches of England and Ireland into the



workers in the clothing and textile trades in 1947. Londonderry is an old estab. centre of the shirt-making industry. The only minerals are sandstone, clay, chalk, or other igneous rocks, and granite, the quarrying of which employs some 3000 persons. In 1946 there were some 1663 elementary schools with 135,600 pupils; and 76 preparatory, intermediate, and secondary schools with nearly 20,000 pupils. The Queen's Univ. Belfast, has some 2000 students. The revenue of N. I. in 1945-46 was £51,216,000 and the expenditure was much the same. The total

COUNTIES AND COUNTY BOROUGHES	AREA IN STATUTE ACRES	POPULA- TION
Antrim (Belfast) .	702,900	197,266
Armagh (Armagh) .	312,767	108,815
Belfast (Co. Bor.) .	15,280	438,086
Down (Down- patrick) .	609,037	210,687
Fermanagh (Enniskillen) .	417,912	51,569
Londonderry (Londonderry) .	512,580	94,923
Londonderry (Co. Bor.) .	2,198	47,813
Tyrone (Omagh) .	779,548	127,586
Total for N. Ireland	3,352,251	1,279,745



Irish Linen Guild

## FLAX HARVESTING IN NORTHERN IRELAND

The flax is put into the retting dam where it will steep for about ten days

railway mileage is 677, the chief railways being the Great Northern, L. M. and S. (N. Cos. Committee), Belfast and County Down, and Londonderry and Lough Swilly. Air services are in operation between N. I. and the prin. airports of Britain. Although economically N. I. is allied to England, much of the pop. is of the peasant proprietor type common to the whole of Ireland; in 1937 the total pop. was 1,279,745.

According to the census of 1937, the following are the areas and pop. of the towns and co. bors. of N. I. The names of the towns appear in parenthesis:—

Irenseus, Saint (c. 120-202), bishop of Lyons at the end of the second century, said to have been a native of Smyrna, Asia Minor. In early youth he seems to have been connected with Polycarp. He was a priest of the church at Lyons under Pothinus, its bishop, upon whose martyrdom, in 177, in the persecutions of Marcus Aurelius, I. succeeded to the bishopric, which he held for twenty-five years. He spent great labour upon missionary efforts among the pagan Gauls, but he is best known for his attempts to mediate between the bishop of Rome and the Christian churches in Asia Minor in their dispute about the proper day for the celebration of Easter, and for his opposition to the Gnostics and the Valentinians. The account of his martyrdom under Severus is not found before the writings of Gregory of Tours, and is probably a mistake. Of his writings, a few fragments of the *Adversus Haereses*, in the original Gk., and a barbarous Lat. trans. of it are all that are extant. See editions of his works by Erasmus, 1526; A. Stieren, 1818-53; W. W. Harvey, 1857; and in Clark's *Auto-Nicene Library*; and Le P. Salvator Herrera, *St. Irénée de Lyon exégète*, 1920; L. Spikowski, *La Doctrine de l'Église dans St. Irénée*, 1926; S. Lundström, *Studien zur lateinischen Irenaus Übersetzung*, 1913.

Irene : (1) (c. 752-802), Byzantine empress. She was a poor but beautiful and talented orphan, a native of Athens, whom Leo IV., E. Rom. emperor, married in 769. On the death of Leo (780) she ruled over the empire, her son, Constantine VI., being only ten years of age. She restored the orthodox image-worship, for which deed she was canonised by the Gk. Church after her death. When Constantine grew up he tried to free himself of her autocratic sway, and in 790 was proclaimed sole ruler by the soldiers. Two years later the empress conspired against her son, and had his eyes put out. She tried to arrange a marriage between herself and Charlemagne. In 802 she was banished by the patriarians to Lesbos, Nicophorus, her treasurer, being placed on the throne. (2) A Rom. goddess of Peace, according to Hesiod a



daughter of Zeus and Themis. She was worshipped at Rome and at Athens.

**Ireton, Henry** (1811–51), Parliamentarian general, b. at Allenborough, Notts; graduated at Cambridge Univ., 1829, and studied law. Married Cromwell's daughter, Bridget, and acquired great influence in the Parliamentarian party. Took an active part in the Civil War, on the outbreak of which in 1612 he was nominated captain of a troop of horse to be raised at Nottingham, near which tn. his estates were situated. He fought at Edgehill and at Naseby, and was present at the siege of Bristol. He signed the warrant for the execution of Charles I. In 1649 he went to Ireland as Cromwell's deputy, and rendered yeoman service to his party. He died of fever when besieging Limerick.

**Iris**, see **VOGNERA**.

**Iriarte, Tomás de** (1750–91), Sp. poet, b. at Orotava in Tenerife. He began his literary career by the trans. of Fr. plays, publishing his first original comedy, *Uacer que haecomo*, in 1770. In 1771 he became official translator in the foreign office at Madrid, and in 1776 keeper of the records in the War Office. A dull didactic poem, *La Musica* (1780, Eng. trans., 1807), inspired by Haydn, was much admired, but his fame rests mainly on his *Fabulas Literarias* (1782, Eng. trans., 1806), two of which, *The Donkey Flautist* and *The Dancing Bear*, are especially celebrated. See E. Cotarelo y Mori, *Iriarte y su época*, 1897.

**Iridaceae**, natural order of monocotyledonous plants, consisting of nearly 1000 species, which flourish in temperate and tropical lands. They are usually herbaceous plants of such beauty as to justify their cultivation for ornament alone. The *Iris* (q.v.) and *Crocus* (q.v.) are representatives of the predominant northern form of this order, as the *Gladiolus*, *Freesia*, and *Ixia* are of the southern.

**Iridium**, one of the metals of the platinum group. Its symbol is Ir, its atomic number 77, and its atomic weight 193.1. It occurs as an alloy of platinum, and also of osmium in the Urals, Brazil, and elsewhere. It is fusible only with difficulty, extremely insoluble (in the massive form it is not attacked by *aqua regia*), and separable from its allied elements only with difficulty. The best method for its preparation is that devised by St. Claire Deville and Debray. This consists in fusing osmiridium with zinc, distilling off the latter so as to leave a porous mass. This is powdered, mixed with barium nitrate, and ignited. The osmium is converted into barium osmate, and the Ir. into its oxide. On boiling with nitric acid the osmium is volatilised as the tetroxide, while the Ir. is obtained in solution from which the double ammonium chloride can be prepared. This, on ignition, gives Ir. in a spongy form, which, on fusion with lead and subsequent treatment with nitric acid, gives the pure metal. Ir. is used for pointing gold pen-nibs, for electrical sparking contacts, and for making standard measures. Its compounds resemble those of platinum (q.v.).

**Iridosmine**, see **OSMIRIDIUM**.

**Iriga**, tn. of the prov. of Ambos Camarines, Luzon, Philippine Is., on the Ibuli It. The chief products are rice, Indian corn, sugar, pepper, cacao, cotton, tobacco, copra, and hard woods. Pop. 20,000.

**Iris**, in Gk. mythology, was the daughter of Thaumias and Kleotia, and the sister of the Harpies. In the *Iliad* she is mentioned as the messenger of the gods, but the office is given to Hermes in the *Odyssey*. In earlier writers she is mentioned as a virgin goddess with wings of gold, but later writers make her the wife of Zephyrus, and the mother of Eros. She was especially considered the messenger of Hera and Zeus, and is depicted with a herald's wand, and a pitcher in her hand. In Gk. the word 'Iris' denotes 'a rainbow,' of which she is generally considered the personification.

**Iris**, one of the larger of the asteroids, planetoids, or minor planets, a group of small planetary bodies between Mars and Jupiter, first discovered in 1801 and 1802. See **ASTEROIDS**.

**Iris**, chief genus of Iridaceae. 'There are many sections of the I. family, but the family may be divided into two main sections—the species and the tall-bearded varieties. The species are the wild irises, most of them small-flowered, which have been found growing throughout the N. hemisphere—California, Morocco, Transjordan, Persia, China and many other places including Britain. As far as species are concerned there are about 200 different types, some grown from bulbs, some from roots, and others from rhizomes. Seven species are easy to obtain and grow. These are *I. reticulata*, with fragrant and velvety flowers, deep violet in colour; *I. stylosa*, the ideal plant, which blooms all the winter with blue flowers excellent for cutting; Sp. and Dutch irises, both June-flowering types, which grow readily in any normal soil; Siberian irises with attractive flowers in violet, white and blue colours; *Kumpferi* or Jap. I., with broad flat blue purple or white flowers; and *I. chmaeris*, a small, low-growing counterpart of the tall-bearded varieties, useful for rock-garden or border. In the tall-bearded section the only I. known to many gardeners is the purplish-blue variety known as *Germanica*. The well-known species of I. are known popularly by the names of *fleur-de-lis*, *flowers-de-luce* and *flags*. Among the best-known species which are to be found in Britain are the *I. pseudacorus*, the yellow flag, and *I. foetidissima*, the gladwyn or blue I. *I. florentina*, the Florentine I., is a native of S. Europe and the is. of the Mediterranean; its rhizome has an aromatic odour like that of the violet, and is known as orris-root. The Algerian I., which has large blue-purple blooms, is one of the best of all winter flowers and will grow in a poor soil.

**Irish Free State**. The name given to S. Ireland by the Irish Free State (Agreement) Act, 1922, which repealed the Gov. of Ireland Act of 1920 (Home Rule) and created a dominion in Ireland on the Canadian model. Under Mr. de Valera's

Gov. the name was changed to Eire. See further under EIRE.

**Irish Fusiliers (Princess Victoria's), The Royal.** Formerly the 87th and 89th Regiments. The 87th was formed in 1793, and fought under Abercrombie in Egypt in 1801. It gained great fame as the '*Faugh-a-Balloughs*' (Clear the Ways) in the Peninsula, where Sergeant Master-son of the regiment captured the first Fr. Eagle during the campaign. It then took part in the Crimean War, the 1882 Egyptian campaign, and the Burmese War of 1885. The R.I.F. took part in the South African War (1899-1902), and was at the Relief of Ladysmith. During the First World War it raised fourteen battalions, which fought in France, Flanders, Macedonia, Gallipoli, and Palestine. After the war it was reduced to one battalion, and linked with the Royal Inniskilling Fusiliers to form one corps. In the Second World War the regiment was part of the famous Eighth Army and fought in many battles on the It. front. Detachments of the regiment also formed part of the Brit. garrison in Leros.

**Irish Guards.** Formed in 1900 to commemorate the gallantry of Irish regiments during the S. African War, 1899-1902. It was formed from volunteers from other regiments of Foot Guards. During the First World War it raised three battalions which served in France and Flanders, bearing the following honours, among others, on its colours—Mons, Marne, Ypres, Gheluvelt, Loos, Somme, Passchendaele, Cambrai, Bapaume, Hindenburg Line, and Sambre. General the Earl of Cavan is Colonel of the Regiment and King (George VI.) is its Colonel-in-Chief. In the Second World War the I. G. fought in numerous battles in Italy and on the W. Front.

'**Irish Independent**,' founded in 1891 as a penny daily newspaper, the *I. I.* (now pub. at 1d.) has the largest circulation of any daily paper in Eire. It is a strong supporter of the Fianna Fail party, and is active in upholding the revival of the Gaelic language—but evidently without much success—and in promoting the Irish arts and industries. The *I. I.*, together with its satellite papers, the *Evening Herald* and the *Sunday Independent*, takes a great interest in all sporting events.

**Irish Moss,** see CARRAGERN MOSS.

**Irish Nationalist Party,** see NATIONALIST. **Irish Press,** organ of the Fianna Fail (*q.v.*) party in Eire. Founded in 1931, as an Irish National paper, but was subsidised mainly by disaffected Irish Americans. It is the organ of the present (1947) Eire Gov. and has no sympathy with the Brit. Commonwealth.

**Irish Regiment, The Royal.** Formed from certain Independent Companies which were regimented in 1683. It fought at the Boyne and at Limerick under Wm. III. It greatly distinguished itself at the fall of Namur in 1695, where its conduct gained from Wm. III. the grant of one of his own badges, the Lion of Nassau. It fought under Marlborough at Blenheim, etc., and under Abercrombie at Alexandria in 1801. It took part in the Crimea (1853-56), Afghanistan (1879-80),

New Zealand (1881), and Egypt (1882) campaigns, and was at Tel-el-Kehir. It was also in the S. African War of 1899-1902. In the First World War it raised nine battalions, which served in France, Flanders, Macedonia, Gallipoli, and Palestine. As a consequence of the inauguration of the Irish Free State the regiment was disbanded in July 1922.

**Irish Republican Army (I.R.A.),** illegal association of Irish extremists, who stand for a republic of all-Ireland, entirely independent of the Brit. connection. They are the successors of those members of the S. Irish Volunteers who refused to fight for the Allies in 1914 and who formed themselves into the Irish Republican Volunteers, organised the Easter Week rising in 1916, and proclaimed an 'Irish Republic.' More extreme than the Sinn Féiners, they rejected the Anglo-Irish Treaty of 1921, and in 1922 involved their country in a second civil war. They numbered probably about 25,000 in the time of the Fine Gael (Cosgrave) Gov., but dwindled to less than 10,000 in the course of the Fianna Fail (*q.v.*) rule of de Valera. Like the I.R.A., Mr. de Valera, when Prime Minister, aimed at the abolition of the border, but whereas he preserved some kind of external association with Britain, the I.R.A. wanted absolute independence, and to that end they organised a series of bomb explosions in Great Britain—probably in conjunction with Nazi agents—but after the passing of the Prevention of Violence (Temporary Measures) Act, 1939 to expedite legal procedure against the malefactors, considerable numbers of the I.R.A. members were deported to Eire and one or two were hanged for murder. In Eire in Dec. 1940 they raided the Phoenix Park Arsenal and stole large quantities of arms and ammunition, whereupon the Dail passed an emergency act authorising the gov. to intern suspects. Early in his tenure of office de Valera had proscribed all pseudo-military bodies, such as the Blue Shirts, and it might have been supposed that the Act was sufficient for the purpose of rounding up the I.R.A., but in Eire it is difficult to secure a conviction, juries being either sympathetic to the suspect or afraid of the I.R.A. The I.R.A. has no official organisation, only ventures to meet in secret, and is governed by an 'Army Council.'

**Irish Rifles, The Royal (now The Royal Ulster Rifles).** Formerly the 83rd and 86th Regiments, which were linked in 1881. The 83rd was raised in 1793, and gained its first honours under Wellington in the Peninsula. It then saw service at the Cape, in Ceylon, and America. During the Indian Mutiny it served in Central India. The 86th was originally employed as Marines, but in 1799 went to India, where it served with distinction at Bharat-pore (1805). During the Indian Mutiny it served in Central India, and later at the Cape. The R.I.R. went through the S. African War, 1899-1902. During the First World War it raised twenty-one battalions, which served in France, Flanders, Macedonia, Gallipoli, and Palestine. In consequence of the inauguration of the

**Irish Free State** Its title was altered from The Royal Irish Rifles to The Royal Ulster Rifles.

**Irish Sea**, sea which lies between the N. of England and the N. of Ireland, connected with the Atlantic on the N. by the N. Channel, and on the S. by St. George's Channel. The greatest breadth (between Morecambe Bay, Lancashire, and Dundalk Bay, Louth) is 150 m.; the greatest length is about 110 m. Within its boundaries are the Isles of Man, Anglesey, and Holyhead.

**Irish Setter**, see SETTER.

**Irish Terrier**, rather large dog, varying



IRISH TERRIER

in weight from 17 to 25 lb.; with a hard, rough, and wiry coat, without any tendency to curl. Its usual colour is a bright reddish-brown, but varies through different shades of brown. Its head should be long and rather narrow; the ears small, alert-shaped, and lying close to the head; the eyes small and hazel, and the nose black; the fore legs straight and strong with round thick feet; chest narrow with deep brisket, and back straight and strong; the tail, if not cut, should curve. The I. T. is quite a modern breed, dating from about 1870; it is much valued for its affection and pluck, and its enthusiasm for chasing anything and everything.

**'Irish Times'**, constitutional daily paper pub. in Dublin and widely circulated throughout Ireland at the price of 2d. Originally a penny newspaper, it was founded by Major Lawrence Knox as an anti-Horne Rule, anti-Catholic, and loyalist paper of a very pronounced type. In contrast to the Irish Press it stood for the maintenance of Ireland's place in the Brit. Commonwealth of Nations. The paper was purchased in 1873 by Sir John Arnott. The I. T. company also publishes in Dublin an *Evening* and a *Weekly* ed. of the I. T., and the *Irish Field*, a paper devoted to every kind of sport.

**Irish Water Spaniel**, see SPANIEL.

**Irish Wolfhound**, supposed to be the oldest breed of dog in the United Kingdom, but the original breed in reality has died out, and information concerning it is only obtainable by tradition, although sev. attempts have been made to repro-

duce it. The old I. Ws. enjoyed a great reputation for their strength and their courage in attacking wolves. In appearance they seem to have been of two kinds, one resembling a greyhound, and the other a mastiff. Modern I. Ws. are the result of the endeavours of Capt. Graham of Dursley, Gloucestershire, to reproduce the old breed, but there is no positive proof that they do so. They are the result of crossing the Great Dane and deerhound, but a fine specimen exhibited in 1895 was the result of crossing a bitch, of Scottish hounds strain with a dash of Siberian wolf strain, with a Russian wolf-



T. Fall

IRISH WOLFHOUND

hound. The points of this modern breed, as required by the Irish Wolfhound Club standard, are: general appearance not quite so massive as the Great Dane, but more so than the deerhound, the largest hunting dogs in existence, with minimum height of 31 in. and weight of 120 lb. (bitches 28 in. and 90 lb.); head long and narrow, muzzle long and moderately pointed, and ears small, and greyhound-like in carriage; neck long, very strong and muscular, well arched without dewlap; chest very deep and breast wide; back moderately long; loins arched; belly well drawn up; tail long and slightly curved, of moderate thickness and well covered with hair; shoulders muscular and sloping; elbows well under; muscular thighs with second thigh long and strong, and hocks well let down; feet moderately large and round with toes well arched; hair rough and hard on body; any colour that appears in the deerhound but black is rare.

**Iritis**, inflammation of the eye, in particular of that coloured membrane called the iris which lies between the cornea and the lens. I. is usually associated with some constitutional disturbance, such as gout, rheumatism, syphilis, or tuberculosis; it may be secondary to inflammation of the cornea or of the sclerotic or choroid coats. It is sometimes symptomatic of meningitis. The symptoms are pain, especially at night, disturbance or occlusion of vision accompanied by a dread of light and the shedding of copious tears. The physiological changes include

an excess of blood at the beginning of the attack, followed by exudation into the fibrous substance of the iris, possible adhesions to the lens or collections of pus between the lens and the iris. The attack may subside in about six weeks, it may become chronic, or it may take on a recurrent form. Generally, rest for the eye is of prime importance; the eye should be shaded and no occupation requiring its constant use should be permitted; the patient should not, for instance, read at all. Pain may be alleviated by hot fomentations or the administration of cocaine. It has been found that adhesions may be treated with success by the use of electrolytic methods.

Baikal. Fishing in Lake Baikal and trapping for furs are the chief occupations outside agriculture. The climate is severe and earthquakes common in the neighbourhood of Lake Baikal. The inhabitants are mostly Russians, Buriats, and Tunguses. Area 280,429 sq. m. Pop. 521,000. The chief tns. are Irkutsk, Balagansk, Kirensk, and Verkholensk. (2) Cap of the E. Siberian Region, and a univ. tn, lies on the Angara R. and on the Trans-Siberian railway, 40 m. N. of the S. extremity of Lake Baikal and 3722 m. from Leningrad. The tn. was almost destroyed by fire in 1879, and has been rebuilt on a remarkably fine plan. It has many fine buildings, factories, and a gold



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## IRKUTSK REGION: LAKE BAIKAL

The railway on the lakeside serves Baikal mica mines

Irkutsk: (1) Region of the R.S.F.S.R. in S.E. Siberia. The country is of a mountainous character, with a general elevation of about 1500 ft., traversed by the loftier chains of the Kitoi and Tunkun in the S., the Sayan Mts. from S. to N.E., and the great plateau of N. Siberia to the N. A great part of the area is given up to agriculture, rye, wheat, barley, oats, and potatoes being cultivated and cattle bred, but the S.E. portion is largely forest land. The most important riv. is the Angara (1000 m.), connecting Lake Baikal and the Yenisei. Coal, gold, iron, salt, fire-clay, and granite are found, but are little worked. There are mica mines by Lake

refinery, and is an important commercial port and the centre of the tea trade. An air service, increasingly employed in the transport of gold and fur, has been estab. between I. and Yakutsk. Riots occurred in I. during 1917, and in July 1918 the tn. was captured by Czechoslovak troops. Pop. (1939) 243,000.

Irham, eccles. par and vil. of Eccles (q.v.) S. Lancashire, England, 7½ m. S.W. of Manchester, at the junction of the Mersey and the Manchester Ship Canal. Pop. 14,000.

Irmin and Irmin Pillars, in Teutonic mythology, god of the old Germanic tribes of the Herminones. The huge wooden

posts called Irmin Pillars were raised in his honour and worshipped by the Saxons during their wars with the christianised Gauls. The chief seat of this worship, the Irminsal (Westphalia), was destroyed by Charlemagne in 772. 'Irmin's (harior) was an ancient name for the Great Bear.

**Irnerius** (sometimes called the 'Lucerna juris'), Italian jurist, b. at Bologna early in the twelfth century. He founded a school at Bologna and at the instance of the Countess Matilda directed his own and his pupils' attention to the *Institutes* and *Code* of Justinian. He appears to have held some office under Henry V. after 1116, and to have died under the Emperor Lothar before 1140. He is generally considered the first of the Glossators, and the author of an epitome of the *Novella* of Justinian called the *Authentica*. See monograph by P. Vico, 1863, and F. C. Savigny, *Geschichte des römischen Rechts im Mittelalter*, vol. iii, 1826, 31.

**Iron, Ralph**, see SCHRIENER OLIVER.

**Iron Age**, third of the three technological ages of man formulated about 1836 by O. J. Thomsen. A Danish curator demonstrated stratigraphically by his student Worsaae in the peat bogs of Denmark, and since generally by all archaeologists.

These ages were not everywhere contemporary, thus the I. A. began in Asia Minor c. 1200 B.C. in central Europe about 900 B.C. in China about 600 B.C. in Britain in the sixth and early fifth centuries B.C. and in the Fiji Is. not until an expedition there in the late nineteenth century. The economical working of iron, particularly for use in agricultural tools and weapons, was a great step forward in civilisation, and it was in fact the chief underlying cause of an urban revolution from which was to arise an organisation of labour and of foreign trade over a large area, and the beginnings of city life and a political consciousness.

The earliest culture of the Early I. A. in central Europe is named after Hallstatt, an exceptionally rich cemetery in Upper Austria which is within forty m. of Noricum, one of the famous iron mines of antiquity. Relics of both bronze and iron were recovered, and stages in the evolution of the sword in both metals provided a relative chronology. But the Hallstatt civilisation as a whole is exceedingly complex, as may be seen from a study of the various hybrid stocks which reach it. Britain in the sixth to fifth centuries B.C. and continental cultures known as Early Iron Age A. The vill sites of All Cannings (Dorset, Wiltshire), Hengistbury Head (Hampshire), and Scarborough, Yorks., have yielded typical pottery, and there are notable camps, or hill-forts, at the Iron Age and Gussbury, Sussex, and Egsbury, Wiltshire.

It may be noted here that the I. A. of Scandinavia is sometimes considered as four main periods — the Celtic I. A. from c. 400 B.C. to the Early Iron I. A. from c. 0 B.C. to A.D. 200, the Late Iron I. A. from A.D. 200 to 400, and the Germanic I. A. c. A.D. 400 to 800. The Viking Period, c. A.D. 800 to 1000 is noted for its iron weapons, and notably for axes and swords inlaid with silver.

Further Celtic immigrants to Britain about the middle of the third century B.C. brought much developed cultures, chiefly from the Marne in N. France, named after a type site at *La Tène* ('the Shallows') on Lake Neuchâtel, Switzerland. The various La Tène cultures grew from trading contacts made between the highly civilised peoples of the Mediterranean and the



IRON HOLLOW CHIT WITH  
HANDLE (Hallstatt)  
(Hallstatt)

Hallstatt farming communities of the Alps. They used it extensively for military and household gear, and the metal smiths were skilled craftsmen as may be seen from such examples of their work in Britain as the Battersea Shield, the Witham Shield, and the Thames Helmet, all in the Brit. Museum. The peoples of the 'Iron Age B' culture, as this is usually called in its wider aspect, were in

the main an aristocracy, but the six chief groups which can be recognised differ much in their agric. domestic and military traditions. Among the important sites and relics in Britain are the *aurus gallicus* forts of Scotland; the charloteers of Yorkshire; the wealthy lake-villa, of Meare and Glastonbury with their fine wood-work and textiles; those of the Atlantic tin-traders and merchants of Cornwall; and the cultures of Wessex have recently been demonstrated in the brilliant excavation of the gigantic hill-fort of Maiden Castle, Dorset. Other remarkable hill-forts with strong defences of this period are Hambury, Devon; and Cadbury and Ham Hill, Somerset.

A third period in the Early I. A. is that dominated by the *Belgic* culture of N. Gaul, which had itself grown by the pressure of the Celts and Germanic peoples of the Lower Rhine on the Marnian culture of La Tène. In Britain the Belgae arrived about 75 B.C. as adventurers, then later as colonists. They were river-side farming folk, and with their new equipment of heavy wheeled ploughs which dealt effectively with loams and clays, they were enabled to follow up the clearance of woodland and to start an agric. revolution. The same ruler, Diviciacus, held sway both in Gaul and Britain at one period; there was a system of inscribed gold coinage; a flourishing export trade in corn, cattle and cattle-products, gold, silver, iron and slaves; and the infiltration of Roman civilisation secured the import of luxuries in return. The cremation cemeteries of *Aylesford* and *Swarling* in Kent with fine wheel-turned pedestal urns and bronzes represent the sepulchral evidence. On the economic side of this final period of the I. A. is the foundation of states to replace tribal groups, and the estab. of urb. caps.—*Verulamium*, (St. Albans), *Callera* (Silchester), and *Camulodunum* (Colchester).

The bibliography is extensive. See, generally, Brit. Museum *Guide to Early Iron Age Antiquities*, 1925. Authoritative works, with references, are T. D. Kendrick and C. F. C. Hawkes, *Archaeology in England and Wales*, 1914–31, 1932; V. Gordon Childe, *Prehistoric Communities*, 1910; C. F. C. Hawkes, *Prehistoric Foundations of Europe*, 1940; Jaquetta Hawkes, *Early Britain*, 1945.

**Iron and Steel.** Iron (Symbol Fe, atomic number 26, atomic weight 55.85) is the fourth most abundant element on the earth. It is only very rarely found in the free state, and then mostly as meteorites which have come from other worlds than ours. Its more usual occurrence is in combination with oxygen as oxides, or with sulphur as sulphides (pyrites). Only the former are true ores of iron, as the latter is infrequently used as a source of extraction of iron owing to the high sulphur content and difficulty of removal. Iron ore, as mined, contains varying quantities of impurities, such as silica, alumina, lime, sulphur, and phosphorus, which have to be removed, as well as the oxygen, before malleable steel or iron is produced. This is almost exclusively done by heat in

the presence of a reducing agent such as coke, charcoal or other carbonaceous material. Terrestrial iron was known early in the prehistory of Mesopotamia and Asia Minor; iron forging was perhaps discovered in Armenia where there are rich ores. The process had spread to N. Europe by 500 B.C. The purposeful repetition gave the first ironmaster of an industry which today produces well over 100,000,000 tons of steel annually. Prehistoric man used iron for tools, weapons, domestic and horse-gear, and particularly for agric. implements such as hoes and sickles.

The primitive processes of working gave a pasty semi-solid malleable metallic product in one operation. The small pieces of iron, weighing only a pound or two at the most, could be hammered into shape with the tools of the early craftsmen. Owing to its extensive distribution throughout the world, iron manu. was widely carried out. Improvement on the crude forging process, though slow, was definite, larger units were built, more powerful blowing machines were introduced, until about A.D. 1300–1400 an unexpected result was achieved. Instead of the partly malleable product, a liquid metal flowed from the furnace, which was found, on setting, to be hard and brittle. This substance we now know as pig iron, and the reason it is so hard and brittle is that it contains about 4 per cent of carbon whereas the prior malleable iron was practically carbon free. The expert ironmaster soon found a way out of the difficulty by a further treatment of the pig iron in a separate furnace and thus there was the beginning of the present-day double process for producing steel or malleable iron. The iron ore which contains about 30 per cent oxygen is heated in a blast furnace with coke to produce pig iron, which contains no oxygen but 4 per cent carbon, the balance being iron. The pig iron is then heated in a steel-making furnace to reduce the carbon to from 0.02 to 1.6 per cent carbon, which is the range of steels from very soft to very hard.

**Sources of Iron.**—Although iron is widely distributed throughout the crust of the earth, the prin. ores from which it is extracted are comparatively few. Among the more important are (i) Magnetite ( $\text{Fe}_3\text{O}_4$ ) containing 72.4 per cent iron; a black ore which, in line with its name, is very magnetic; (ii) Haematite ( $\text{Fe}_2\text{O}_3$ ) containing 70 per cent iron; its colour varies from bluish-grey to red, and one well-known form is the so-called 'kidney ores' of Cumberland; (iii) Limonite ( $2\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ ) containing 59.8 per cent iron, its colour varies from various shades of brown to yellow; and (iv) Siderite ( $\text{FeCO}_3$ ), also known as spathic iron ore, contains 48.3 per cent iron; its colour varies from pale yellow to brown and grey.

Pyrites ( $\text{FeS}_2$ ) is not really a source of iron as it contains too much sulphur to allow a profitable extraction of iron from the raw material. It is a mineral which occurs widely and extensively throughout the earth's crust, but its development as a source of iron is a problem for future generations.

**EVOLUTION OF IRON AND STEEL MANUFACTURE**—In the Middle Ages pig iron was produced in primitive blast furnaces using charcoal as fuel which was burned by an air blast from bellows driven by water wheels. The pig iron was cast into sand beds, allowed to go cold, broken up and then the second process of conversion to malleable metal was carried out in a separate furnace known as a charcoal refinery. Once again the fuel used was charcoal, made by partial burning of wood with a controlled and limited access

for production of wrought iron, but again only giving a semi solid spongy product. The blast furnaces of Darby's day in the late eighteenth century had an output of 10 tons per week, which was considered colossal. Modern blast furnaces which have been developed from it have an output up to 1,000 tons per day.

The major problems of steelmaking may be classified under two headings: (1) heat, (2) refractory material able to resist heat. Iron ore does not react with carbonaceous reducing material until a temp. of over



BLAST FURNACE FOR THE PRODUCTION OF PIG IRON

of air. The product of the refinery was a semi solid spongy mass known as charcoal iron or wrought iron, which was removed from the furnace by tongs and hammered into a solid bloom of malleable metal. Later this bloom was reheated in a charcoal furnace and rolled into billets, bars and other shapes. During the seventeenth century the growing shortage of wood for conversion to charcoal caused the ironmakers to look elsewhere for a possible source of heat. Coal had been known for several centuries beforehand and it seemed a likely substitute. Early experiments were not successful but eventually success was obtained by treating coal so as to convert it to coke in the same way as wood has been converted to charcoal. The charcoal charged to the blast furnaces was replaced by coke by Darby in 1760. The charcoal used in the refinery was also replaced by coke and by long-flaming coal from this developed the Puddling process

when 1,200° C is reached. From this it follows that man could not know iron until he had learned how to make fire which in an open hearth or camp fire reaches a temp. of about 1,000° C. But pure iron does not melt until a temp. of 1,527° C, and it requires about 1,600° C. to get a proper superheat so that the metal can flow during casting. By burning coal and charcoal at room temp. in an open grate with forced draught it is possible to get about 1,100° C, which is still short of the melting point of pure iron and accounts for the production of charcoal iron and coke in the semi-solid pasty condition. The fact that the blast furnace gave liquid metal arose from the absorption of 4 per cent carbon by the pure iron. This metal is not malleable and melts at 1,250° C.

Two methods of producing the high temp. necessary to melt pure iron were evolved at roughly the same period, by Bessemer in 1856, and Siemens in 1866.

The method perfected by Bessemer was the more remarkable as it consisted simply of blowing cold air through molten pig iron. This not only removed the excess 4 per cent of carbon but also other undesirable elements such as silicon and manganese, and at the same time increased the temp. of the metal from some  $1300^{\circ}\text{C}$  to over  $1600^{\circ}\text{C}$ . The method used by Siemens is known as the regenerative principle. When coal or wood at room temp. is burned by air at room temp. in an open fire the maximum temp. reached is about  $1000^{\circ}\text{C}$ . The effect of putting a 'blower' in front of the fire so as to create a good draught and force all the air into close contact with the fuel is well known. By this means temps. up to  $1400^{\circ}\text{C}$  can be obtained but this is still not sufficient to melt pure iron. Instead of using air at room temp. Siemens tried out the idea of preheating the air so that by starting off at a higher temp. he expected to get a higher final temp. in the furnace. His early experiments were unsuccessful until he combined the initial idea with another one—converting coal into a combustible gas by burning it with a limited air supply in a gas producer. He then preheated both this producer gas and the air for combustion to over  $1200^{\circ}\text{C}$  and thus was able to start off work with an initial temp. as high as can be obtained in an open fire. The final temp. reached after combustion was thus in the region of  $1750^{\circ}\text{C}$ . The method of preheating the air and gas is known as the regenerative principle. The hot gases from the furnace pass through two chambers, known as regenerators, in which brickwork is loosely stacked and to which the waste gases give up their excess heat. On reversing the furnace the incoming air and gas pass through these two chambers and increase their temp. to over  $1000^{\circ}\text{C}$ . before being burned in the furnace. On passing out at the far end the waste gases reheat two corresponding chambers at that end. The Siemens Regenerative furnace has proved by far the most successful way of producing steel economically. Electric arc and electric induction furnaces have become widely used for special types of steel. The temps. possible in these two types are well in excess of the melting point of pure iron at  $1527^{\circ}\text{C}$ .

The development of the Integrated Plant for the production of steel represents the most important recent advance. The principle is to have the coke ovens for the production of coke, the blast furnaces for the production of pig iron, the steelmaking plant for the production of steel and the rolling mills for fabricating to shape, all on the same site. This makes for considerable fuel economy, as large quantities of heating gases are evolved from the coke ovens and blast furnaces as a by-product. Further heat is conserved by charging molten pig iron to the steelmaking plant direct from the blast furnaces or, as is more usual after storing in a mixer, and by charging hot steel ingots to the reheating furnaces for rolling.

**Production of Steel from Pig Iron**—Essentially, iron ore is iron plus a con-

siderable quantity of oxygen, steel is iron plus a little carbon (0.04 to 1.5 per cent), so the fundamental action of steel making is to remove much oxygen from ore and replace it with a little carbon. This is done in a preliminary stage of converting coal to coke, a primary stage of converting iron ore to pig iron in blast furnaces, and a secondary step of steel making in Bessemer, Open Hearth, or electric furnaces.

**Production of Coke**—Suitable types of coal are heated in coke ovens out of contact with air, which converts the coal into coke and evolves large quantities of a combustible gas known as 'coke oven gas'. By products such as ammonium sulphate, tar and crude benzol are extracted from the gas which is then passed to the plant for use as a means of heating.

**Production of Pig Iron**—Pig iron is produced in vertical shaft furnaces from ore, limestone and coke being charged at the top and air blown in at the base. An account of the process as carried out in 1531 says: "There are five men who keep the fire to melt the ore having 12 pence per day each. And there are four men at the Bellows whereof three blow at a time and one of them stoude voyde to refresh the others, for they bloweth six or seven hours at every galle that is melting, and thus they make two galle a day each weighing 1 cwt. In 1760, Darby replaced the charcoal which had previously been used as fuel with coke. Outputs by this improvement were increased to 1½ tons per day. In modern blast furnace practice, output of 1000 tons per day are known.

Iron ore as mined is not pure iron and oxygen, it contains varying amounts of silica, lime, alumina, sulphur, phosphorus and other extraneous materials which have to be eliminated. Much of this is done in the production of pig iron in the blast furnace but there is an additional pick up of about 1 per cent carbon. The effect of this is to produce a hard brittle product known as pig iron which is subsequently treated to produce steel cast iron etc.

A modern blast furnace is a circular stack about 100 ft. high and with a maximum diameter of 18 to 26 ft. There is a skip hoist for taking ore, limestone, and coke to the bottom for charging through a bell and one at the top level. Air blast is supplied at the base through tuyeres from a powerful blowing engine and it is preheated in Cowper stoves. The idea of hot blast being first developed by Neilson in 1828. The iron ore, limestone, and coke while descending through the furnace meet the ascending current of hot air which burns the coke, converts the ore to pig iron, and allows the impurities to settle as a liquid slag floating on top of molten pig iron. At regular intervals the slag is tapped off through a slag notch and discarded, while the pig iron is tapped through a separate iron notch and either cast into pig beds or transferred while still molten to a mixer where it is retained until required in the steelworks.

**Iron Castings**—The pig iron as originally produced from the blast furnace is



melted in special air or cupola furnaces, where its carbon content is adjusted to the required amount, and other constituents such as silicon, manganese, sulphur and phosphorus regulated to the desired specification. The cupola furnace is similar in construction to a blast furnace, but is much smaller. It is charged at the top with coke and pig iron. A blast of air forced through tuyeres near the base causes the coke to burn, and develops sufficient heat to melt the iron, which is tapped off through a metal spout into a ladle, from which it is poured into the moulds prepared to the shape of the casting required. Owing to its ease of melting and fluidity when melted, the iron can be formed into intricate shapes in various sizes weighing from a few pounds to upwards of 100 tons. The various types of castings require different compositions of metal according to the use to which they are to be put. For engineering purposes the cast iron must be strong but not too brittle, while for ornamental purposes the main requirement is fluidity in order that the metal may take a sharp impression of the intricate shapes. In other cases it is important that the finished casting should be easily machined. For engine cylinders the iron must have strength, hard wearing surface, and easy casting properties owing to the thin sections required in certain places. For conversion to malleable castings the iron should be low in silicon, giving a white fracture. The castings are malleable by annealing in iron ore. High duty cast irons are produced from specially refined pig iron, and may additionally contain alloying additions such as nickel, chromium, molybdenum, vanadium, etc. Cast iron pipes may be made by centrifugal casting. In making chill castings such as rolls, the surface of the main body is rendered very hard by casting the metal into a cast iron mould instead of the usual moulding sand.

**Production of Wrought Iron.**—Although the amount of wrought iron produced today is comparatively insignificant, yet it was the most important process for converting the hard brittle pig iron to a malleable product until steel came, by the Bessemer and Open Hearth processes became well established just prior to the start of the present century. In making malleable metal from pig iron the essential process is to remove the excess carbon, silicon, manganese, sulphur and phosphorus. This is carried out by oxidation and the conversion of the oxides thus formed into a fluid slag which can be separated from the metallic product. The difference between wrought iron and steel is that the former is produced in a semi-solid pasty condition much intermixed with slag, while the latter is made in a completely liquid form and the separation of slag from it is virtually complete. Wrought iron is made by the puddling process. About 5 cwt. of cold pig iron are charged into the furnace and melted down in a lining which consists primarily of iron oxide. On completion of melting the puddler lowers his damper which

brings the bath up on the boil and much of the slag formed is boiled over the sill plate into a buggy. Later the charge begins to set back, boiling-over ceases, and then 'puddling' commences. This is one of the most onerous jobs carried out close to a furnace at high heat for over half an hr. that has ever fallen to the lot of man. The pasty white hot metal is divided into four by pushing a rod through it, then each of the four pieces is turned and moved about in the furnace until it has reached a suitable state of malleability. The pieces, weighing about 80 to 100 lbs., are removed separately, and compressed by a shingling hammer to remove excess slag and formed into a suitable shape for further reheating and rolling.

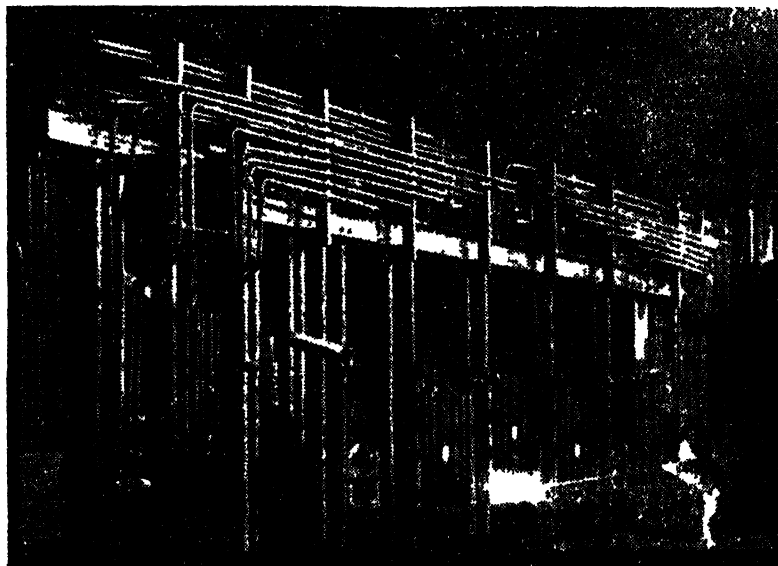
**PRODUCTION OF STEEL.**—Steel is made by a variety of processes of which the most important are (1) Crucible, (2) Bessemer, (3) Open Hearth, (4) Electric Furnace. Except in the first case there is a further subdivision into Acid and Basic processes. As the difference between acid and basic is the same in all three processes, it may be briefly dealt with first. In an acid furnace the refractory lining, on which the charge of pig iron and scrap steel is melted, is made of silica brick on top of which is fritted silica sand. In a basic furnace the furnace bottom is lined with magnesite brick on top of which dolomite is rammed. Although the nature of the refractory used for the bottom is the only essential difference, yet it has a very considerable effect in removing impurities. With an acid bottom it is impossible to remove any sulphur or phosphorus; in a basic furnace their removal is possible. Acid steel is still made for special qualities but the present tendency is to change over more and more to the basic process.

**Crucible Steel.**—The Crucible Steel process was invented by Huntsman in 1740. It is still used, more particularly in the Sheffield area, for making high grade steels. As it is purely a melting process, with no refining, it is necessary to charge pure materials. The Crucible furnace is oval in shape and takes two pots side by side, with room around them for coke. When the Crucible is hot enough, a charge of 50 lbs. of blister steel is emptied through a sheet-iron funnel and the cover put on. On melting, the charge is 'killed' with ferro-manganese and aluminium and poured into a mould.

**The Bessemer Process.**—Bessemer took out his early patents in 1856, and within a few years the process was being operated successfully on a commercial scale. In this process, molten pig iron is converted into steel by blowing air through a Bessemer converter. The difficulties to be overcome in the early days arose from the fact that (i) it is necessary to blow vigorously through the molten metal right to its very core; (ii) blowing must only take place when the whole of the metal is in the converter; (iii) it must be possible to stop and restart blowing at will. The converter is pear-shaped, lined with refractory, containing holes in its base through which air is forced at a pressure of about 25 lbs. per sq. in. In operation the converter is

turned down to the horizontal and a charge of molten pig iron poured in, the air blast is then turned on and the converter turned up to the vertical position. The air, in passing through the metal, removes carbon, manganese, silicon and sulphur, and at the same time increases the heat from about  $1250^{\circ}\text{C}$  as charged to  $1600^{\circ}\text{C}$ . During blowing there is a violent evolution of sparks from the mouth of the converter, and the change in composition of the metal can be fixed by the appearance of the flame. When the

the hearth of the furnace and melted down by a hot flame produced by the combustion of preheated air. This preheating is done on what is known as the regenerating principle. The waste gases coming out from one end of the furnace pass through loosely stacked brickwork to which they give up their heat. Every half hour the direction of flow of the gases is reversed and the incoming air and gas are preheated to a high temperature (about  $1250^{\circ}\text{C}$ ). In this way flame temps. of  $1750^{\circ}\text{C}$  are obtained when the



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#### STEEL MAKING FURNACE—SIEMENS OPEN HEARTH PROCESS

melter judges that the metal is correct, the converter is turned down, the blast switched off, and the finished charge poured into a ladle before teeming into moulds. The Bessemer process was not widely used in this country but had a very considerable development on the continent. Within recent years, two large basic Bessemer plants have been erected in this country with satisfactory results.

**The Siemens Martin Open Hearth Process**—The Siemens Open Hearth process was perfected by Sir W. Siemens in 1866, and the first commercial plant for its production was erected at Llandovery Castle, in the following year. The original furnace was about one ton capacity, and had a potential output of about 1000 tons per year. Today, about 100,000,000 tons are made annually by this process. Cold pig iron and scrap steel are charged into

two are combusted in the hearth of the furnace. The steel is thus heated to a temp. of  $1600^{\circ}\text{C}$  which is the maximum generally required for low carbon steels. After clamping, there is a quantity of molten metal covered by a slag containing the impurities. The remaining impurities in the metal are removed by feeding in iron ore and scale or limestone until a suitable composition of the metal is obtained. This is determined by taking samples from the bath and testing them by chemical analysis. When the composition is considered satisfactory, a tap hole is opened at the back of the furnace and the molten metal and slag is allowed to flow out into ladles. The metal is deoxidized to suitable condition by additions of ferro-manganese, ferro-silicon, and/or aluminium from these it is teemed into moulds. The pig iron used varies from

20 to 80 per cent, according to the required composition of the steel, an average figure being about 50 per cent each of pig iron and scrap metal.

**Electric Furnace Steels.**—Electric furnaces may be classified into two types, (1) arc furnaces, and (2) induction furnaces. Of these, the former is much more widely used. In the arc furnace, heat is generated by a spark between the carbon electrodes and the charge of metal. The temp. of the arc itself is well over 3000° C., so that the local heat is very intense. Owing to the high cost of electric current required, the electric arc process is more generally worked with a charge of 100 per cent of scrap steel, in order to cheapen the process. The charge is melted down in a manner similar to that in the Open Hearth process. It is further refined as before by additions of iron ore and limestone. Finally the metal is cast and termed as before. The electric furnace is used in the manuf. of high grade steels, the basic furnace being more widely used as it has considerable advantage in removing sulphur and phosphorus and producing 'killed' steel comparatively free from oxide inclusions. It is improbable that the electric furnace will be able to compete with the Bessemer and Open Hearth processes in the manuf. of steel for constructional purposes and the more common uses, except under special conditions. It will, however, prove a serious rival and will probably finally oust the older processes of steel making in high quality grades.

The electric induction furnace has been further advantageous in replacing the older crucible steel process. As in the crucible furnace there is no refining, and pure metal is charged into the crucible and melted down by a high frequency induction current which generates terrific heat in the metal itself, and causes it to melt rapidly. At the same time the metal is stirred up so as to give very uniform composition.

**Steel Castings.**—These can be made from open hearth furnaces, both acid and basic, from small converters, from crucibles, and from the electric furnace. For general foundry work it is more common to find a small open hearth or 'Tropenas' converter, fed with molten iron from a cupola. It is important to see that the metal is thoroughly killed during the casting operation, otherwise difficulties are likely to arise due to the formation of blow-holes inside the casting. For steel castings the moulds used may be classified either as 'green sand' or 'dry sand,' the former being used for light castings and the latter for heavier castings. 'Green sand' moulds is the general term for those which have not been dried previous to the metal being poured in. 'Dry sand' moulds are made much as above but are faced with moulder's composition and give a clear skin.

**Straight Carbon Steels.**—The properties of steel are considerably altered by varying the carbon content. In general, increasing carbon content from 0.04 per cent to 1.5 per cent gives harder steels with a higher tensile strength but decreasing

ductility and machinability. Some typical ranges and uses are indicated in the following table:—

Carbon	Name	Uses
0.01 to 0.08	Dead mild	Sheets, tinplates, pipes, plates.
0.08 to 0.25	Mild	Structural steels, reinforcing rods.
0.25 to 0.45	Carbon	Rail steels, axles.
0.45 to 0.65	Medium carbon	Holding down bolts.
0.65 to 0.9	High carbon	Drills and other tools.
0.9 to 1.5	Ultra High carbon	Chisels, turning tools, files, razors, etc.

Straight carbon steel can be hardened by quenching in water from a suitable temp. between 750 and 950 °C. according to carbon content. This hardening is accompanied by an embrittling effect which can be minimised by tempering the quenched steel to suitable temp. below 700 °C. The degree of tempering is controlled by the time and temp. at which the tempering operation is carried out.

**Alloy Steels.**—Steel has found a very extensive use in industry and commerce due to the fact that it is possible to produce such a wide range of properties by varying the carbon content and heat treatment. There are certain difficulties with straight carbon steels which have been overcome by the introduction of the so-called 'alloy steels,' i.e. steels containing considerable percentages of alloying elements such as nickel, chromium, etc. The number of such steels on the market today is well into the thousands, but efforts were made during the recent war years to reduce the numbers and so simplify production, and yet retain the valuable properties which such steels have conferred on them by the use of alloying additions.

**Nickel.**—Nickel steels, owing to their strength, are widely used for stressed parts. With carbon around 0.1 per cent and nickel 3.5 per cent, the so-called 'case-hardening steels' find a wide application in heavily-stressed parts requiring a very hard outer surface and a tough core. With a somewhat higher carbon content and similar nickel, the steels have many uses in engineering where both strength and toughness are required. High nickel steels containing 25-40 per cent nickel are used for their resistance to corrosion, special electrical properties, and due to the fact they are practically non-magnetic.

**Chromium.**—Chromium steels are used because they produce greater strength and hardness. Addition of from 0.3-2.5 per cent chromium are typical. Such steels are used for tyres and springs. The addition of 12-20 per cent chromium produces the well-known stainless steels, first developed by Harry Brearley about 1913.

**Chrome-Nickel.**—It is more usual to find both chromium and nickel, as the combination makes for many advantages in hardness and strength combined with ease of heat treatment, to produce suitable properties. In the stainless steel series, the so-called 18/8 (18 per cent chromium, 8 per cent nickel) is widely

used today, as they have the widest range of corrosion-resistant properties. They are also satisfactory as heat-resistant steels. They have a wide use, but perhaps the best known is for table knives, where they have been a boon to the harassed housewife.

**Vanadium**—Vanadium is generally present in alloy steels in relatively small amounts, less than 1 per cent, and more often less than 0.2 per cent, but this has an important effect in increasing the toughness of the steel. It has perhaps its widest use in chrome-vanadium steels, which are used because of their extra strength and toughness. A common analysis is 1 per cent chromium and 0.1 per cent vanadium. It is also added in small amounts to produce a high degree of hardness in tool steels, armour plating, projectiles, rock drills, etc. Vanadium-steel castings are noted for their high elastic properties, strength and toughness.

**Molybdenum**—Molybdenum is present in steels also in quantities under 1 per cent, and in association with the more common alloying elements such as nickel and chromium. It has got a marked effect in increasing the strength both at room and elevated temps. and is an important addition to remove a difficulty known as temper brittleness. There is a fairly wide range of molybdenum steels, each type having its own special application. Molybdenum-iron castings are used where a hard wearing surface is required, while it has also been found advantageous in chilled iron rolls.

**Manganese**—Although manganese is present in all straight carbon steel to an extent of 0.3-1.5 per cent, it is not considered as an alloying addition. The high manganese steels containing about 12 per cent are true alloy steels. They were put on the market by Sir Robert Hadfield in 1882, and have found many uses due to their hardness and high resistance to wear. They are quite commonly used for railway crossing points and for crushing machinery. In wartime they were used for steel helmets. It is a non-magnetic steel.

**Silicon**—High silicon steels containing 0.5 to 3.0 per cent have important electrical properties—a high permeability with low hysteresis and eddy current losses. They are used in electrical transformers. Steels containing from 11 to 20 per cent have a high resistance to corrosion by acids which enables them to be used for containing vessels. A silicon-manganese steel has found extensive uses for general engineering purposes and armour plate.

**Tungsten**—This element is used in high speed tool steels and in magnetic steels. Its effect in high speed tool steel is to retain the cutting edge while allowing the steel to reach a red heat. Ordinary carbon tool steels which may be hard initially are tempered under similar conditions and lose their hardness. Modern high speed tool steels contain 15 to 20 per cent tungsten.

Steels containing from 5 to 6 per cent have good magnetic properties and are used for magnets of generators, magnetos, etc.

**Cobalt**—Cobalt steels containing from 2 to 35 per cent cobalt give a magnet steel superior to the tungsten magnet steels.

**Copper**—About 0.5 per cent copper is said to be beneficial in increasing the corrosion resistance of ordinary mild carbon steels.

**Lead**—About 0.2 per cent lead is in cop with certain steels to improve their machinability. Lead does not alloy with steel and it exists as dispersed globules throughout the metal. A typical steel of this class is known as 'Leadloy'.

**Sulphur**—Although sulphur above 0.08 per cent is generally considered bad in steel making, it has not yet up to 0.3 per cent is added in order to improve machinability.

See R. Jenkins, *The Early History of Steel Making in England 1733 and Iron Making in the West of Dean 1926*. L. S. Ashton, *Iron and Steel in the Industrial Revolution 1921*. R. A. Hadfield, *Iron and Steel: An Outline of Steel and Iron 1930*. J. Derriden, *Iron and Steel Today 1939*. J. B. Fortum and H. B. Mann, *The Story of Iron 1938*.

**Ironbark-tree**, popular name applied to several species of *Eucalyptus* for a very obvious reason. *Ironbark* the red gum tree receives the name most often. It attains a height of 150 to 200 ft. in Australia and is noted for its hard bark, durable wood and the gum which it exudes.

**Ironclads**, originally woolen ships protected by iron plates, were used in 1752 at the siege of Gibraltar. The first used them in the Crimean war and in that time, built four iron plated line of battle ships. In 1860 Britain built the *Warrior*, an iron steam battleship with 4 in plates.

**Iron Cross**, see **ORDERS OF KNIGHTHOOD**.

**Iron Gates**, narrow passage, interrupted by rapids and rocky shoals, in the course of the Danube below Orsova (Rumania). In 1896 the Hungarian Gov. at a cost of £400,000 succeeded in rendering the channel navigable by blasting and canalising. A pilotage service is maintained here by the Danube Commission.

**Iron Mask**, The Man in the mysterious figure of great romantic interest in 17th hist. He was a political prisoner in the reign of Louis XIV., who when travelling from one prison to another, always wore a mask. He finally died in the Bastille in 1703. The mystery of his identity still remains an historical problem.

Klenné du Juncu (d. 1706) Lieutenant of the Bastille, recorded in his official journals that on Sept. 15, 1698, Saint Mars the new governor, arrived at the prison from the Île St. Marguerite, bringing with him in a litter a prisoner whom he had formerly held in custody at Pignerol. This prisoner always wore a black velvet mask, and his name was never told. He died on Nov. 19, 1703, and was buried in the par. cemetery of Saint Paul, his name being registered as 'M. de Marchidol'. The name actually recorded in the register was 'Marchidol'.

Stories spread about the prisoner even during his lifetime, and in 1745 and 1746

it was asserted in *Mémoires Secrets pour servir à l'histoire de Perce* that he was the duke of Vermandois, the illegitimate son of Louis XIV. and Mlle. de la Vallière, and was imprisoned for life for having assaulted the grand dauphin. Public interest was further aroused by Mouhy's romance, *L'Homme au masque de fer*, and by the writings of Voltaire on the subject. Voltaire, under the head 'Ana' in *Questions sur l'encyclopédie*, asserted that the 'Mask' was a bastard older brother of Louis XIV. and the son of Anne of Austria and Cardinal Mazarin. Abbé Soullavie, in *Mémoires de Marechal Richelieu*, made out a case for a twin brother of Louis XIV., but this theory is historically untrue, though it appealed to Grimm, Zschokke, Fournier, and others.

A much more feasible conjecture is that the 'Mask' was Count Mattioli, a minister of the duke of Mantua (b. 1640). He negotiated with Louis for the surrender of Casale, but the Fr. king, discovering that his dealings were treacherous, had him kidnapped (1679) and conveyed to Pignerol. But there was no secrecy about Mattioli's imprisonment, and it appears more than probably that Mattioli died at Pignerol in 1694.

The mysterious prisoner has also been identified with Eustache Danger, imprisoned at Pignerol in July 1669. Andrew Lang, in *The Valet's Tragedy* (1903), identified this Danger with one Martin, the valet of Roux de Marsilly, a Huguenot intriguer in England. Barnes (*The Man of the Mask*, 1908) found Lang's theory untenable, and suggested that Danger was really James de la Cloche, the natural son of Charles II. Lang proved subsequently that James de la Cloche was identical with 'Prince' James Stuardo, who died in Aug. 1669 at Naples.

As well as the works already mentioned, see a letter by Heiss to the *Journal Encyclopédique*, 1770; L. Dufers, *Intercepted Correspondence*, 1789; Roux-Fazillac, *Recherches historiques sur l'homme au masque de fer*, 1801; J. Delort, *Histoire de l'homme au masque de fer*, 1825, and *Histoire de la détention des philosophes*, 1829 (which contains the correspondence between saint-Mars and Louvois); M. Topin, *L'homme au masque de fer*, 1870; T. Jung, *Le verité sur le masque de fer*, 1873 and Barnes, *The Man of the Mask*, 1908.

**Iron Lung**, see under AEROTHERAPEUTICS.

**Iron Mountain**, cap. of Dickinson co., Michigan, U.S.A., 16 m. N.W. of Escanaba. Has extensive iron mines which produce large quantities of first-class ore. Lumber mills and Ford motor works. Pop. 11,000.

**Ironside**, Sir William Edmund, first Baron, Brit. soldier b. 1880. Was in the Brit. secret service in Ger. S.W. Africa during the Herero campaign, receiving the Ger. service medal for his good offices. He was appointed to command the Brit. Expeditionary force sent out to Archangel during the latter part of the First World War. His conduct of the operations against the Bolshevik forces concentrated

along the Dwina showed generalship of a high order. Commanded the Ismid Force, 1920; N. Persian Force, 1921; Commander, Meerut Dist., India, 1928-31; Colonel Commandant, Royal Artillery, since 1932; Governor and Commander-in-Chief, Gibraltar, 1938-39; Inspector-General of Overseas Forces, 1939; Chief of the Imperial General Staff, 1939-40; Commander-in-Chief, Home Forces, 1940; Field Marshal, 1940. He wrote *Tannenberg: The First Thirty Days in East Prussia*, (1925).

**Ironsides**, nickname given to a man, particularly a soldier, who displayed great bravery. Edmund II., king of England, appears to have been the first in English history to receive the name. It was applied to Cromwell, and later to his cavalry, those 'God-fearing men,' whom he trained to iron discipline. They were the chief means of the parl. victories in the field.

**Ironton**, co. seat of Lawrence co., Ohio, U.S.A., on the Ohio R., 140 m. S.E. of Cincinnati. It occupies a central position in a productive mineral dist., abounding in iron ore and bituminous coal. Pop. 15,800.

**Ironville**, eccles. par. of Derbyshire and Nottinghamshire, England, 3 m. S.E. of Alfreton. Pop. 3000.

**Ironwood**, name given to the wood of many different trees on account of its hardness and durability, and is applied to various plants in different countries. A good timber-tree of India is *Mesua ferrea*, the Nagas or L., and is a species of Gutierrez. *Sideroxylon incarnae*, a Sapotaceous plant, is the Cape L.

**Ironwood**, banking city of Gogebie co., Michigan, U.S.A., 6 m. S.W. of Bessemer. It has become noted by reason of the valuable deposits of magnetic iron ore and hematite which abound in the vicinity. It is surrounded by lakes and streams, where there is good hunting and fishing. Pop. 13,300.

**Iron Work**. Iron, like bronze has been used for casting, but the purest use of iron in decorative art is to be found in wrought iron. Since early days iron has been used for weapons of war, but, owing to the effect of rust on iron, little early iron work is left to us. Iron appears to have been used by the Egyptians as early as 1500 B.C., and on a large scale in Babylon after 600 B.C. for such things as bolts and hinges. The Assyrians used iron to a great deal for the framework of fortifications and the coverings of buildings, although with them iron was considered a precious metal and was probably scarce. The Hebrews used iron considerably, and the Phoenicians made vessels of iron with which they traded. Pliny mentions Grecian iron statues, while Plutarch writes of a polished iron helmet which shone blue like silver. We know from writings that the Greeks fully appreciated the beauty of iron and knew about the casting, forging, welding, embossing, tempering, polishing, and inlaying of iron. They used iron for such things as chariots, agric. implements, and in shipbuilding, whilst in Sparta coins and jewellery were often made of iron.

The Romans continued with I. W., using the metal for armour, window-bars and grilles. Barbaric races used iron before they were conquered by the Romans, and continued to use it with greater success than their conquerors. Up to the fourteenth century I. W. was the work of a smith, and he made and decorated such things as grilles, door decorations, and hinges. During the fourteenth century, a change came over I. W. The smith began to work the iron when cold, using file and saw, chisel and vice, whilst sheet iron also was cut and hammered into patterns. Thus came into being the armourer and locksmith, who used heat for working the iron only in the preliminary stages, and who were capable of carving a statuette out of a solid lump of iron. This change over I. W. came from the E., and designs often more suited to wood and stone were carried out in iron. The Fr. iron-workers produced after this time the best I. W., their work being both beautiful in design and delicate in finish. During the centuries that followed iron was used for such things as locks, door handles, screens, firebricks, knockers, grilles, gates, and railings; and the designs used in the work included scrolls, rosettes, leaves, flower-patterns (particularly the passion-flower), and heraldic devices. See C. Ffoulkes, *Decorative Ironwork*, 1913; J. S. Gardner, *Ironwork*, 1927-30; J. A. R. Stevenson, *Din of a Smithy*, 1932.

**Irony** (Fr. *ironic*, Lat. *ironica*, Gk. *eiporeia*, dissimulation), a form of ridicule in which statements, apparently accepted, are held up to scorn, saying one thing and meaning another. A familiar example may be found in Pilate's question to the Jews, 'Shall I crucify your King?' (John xix. 14). Socrates used this mode of speech and raised it to a philosophical fine art. Among Eng. writers Swift holds the palm for abundant and apt examples of I.

**Iroquois**, name given by the Fr. to one of the great confederations of the N. Amer. Indians. The league was originally composed of five tribes, the Mohawks, Oneidas, Onondagoes, Cayugas, and Cayugas, called the 'Five Nations', and probably dating from the sixteenth century. In 1713 the Tuscaroras were admitted to the league, which was henceforth known as the 'Six Nations.' The I. were undoubtedly the strongest confederation of Indians in N. America, and numbered, at that time, about 11,600, of whom 2150 were picked warriors. Their original home seems to have been round the upper reaches of the R. St. Lawrence, from which they moved south-westwards round the shores of Lakes Ontario, Huron, and Erie and occupied the greater part of Upper Canada, the whole of New York State, and a large part of Pennsylvania, Ohio, and Michigan, while a section of them moved S. through Virginia and Tennessee to the Carolinas. The league was strong enough, not only to hold its own against such hostile tribes as the Hurons and Eries, but to extend its dominion over the Mohicans, the Nanticokes, Shawnees, Mississaugas, and other Algonquin tribes. In the border warfare

with the Fr., the I. always sided with the Eng., while their bitter enemies, the Algonquins, fought for the Fr.; they also fought for the Eng. in the Amer. War of Independence. The Iroquoian stock, including Iroquois, Wampanoag, Cherokee, and Kiowa number 52,100 in the U.S.A. There are reservations in Canada, New York, Oklahoma, and Wisconsin. They have made considerable social progress, adopting the customs of Eng. civilisation and becoming, for the most part, Protestants, and attending the Eng. schools.

See W. Halo, *The Iroquois Book of Rites*, 1883; J. C. Pilling, *Bibliographies of Eskimauan, Siouan, Iroquoian Languages*, 1888 (Washington); J. N. Hewitt, *Iroquois Cosmology*, 1924; A. Pound, *Johnson of the Mohawks (1715-71)*, 1930; F. W. Seymour, *Lords of the Valley*, 1930, and C. Wissler, *The American Indian*, 1933.

**Iroquois Language**, see under NORTH AMERICAN NATIVE LANGUAGES.

**Irradiation**. When white objects or objects of a very bright colour are seen on a dark ground they appear larger than they really are. This phenomenon is called I. Thus a white square on a black ground seems larger than an exactly equal black square on a white ground. The phenomenon differs very much in different people and even in the same person on different days.

**Irrational Numbers**, see IRRATIONALS.

**Irrawaddy**, see IRRAWADDI.

**Irrédents**, It. patriotic and political society which was particularly active immediately after 1878, when it had for its avowed object the liberation from foreign rule of all parts outside the boundaries of Italy, in which, it was claimed (sometimes wrongly), the It. tongue is spoken universally, i.e. S. Tyrol (Trentino), Görz, Istria, Trieste, Tessino, Nice, Corsica, Malta. It became of little importance after the Fr. occupation of Tunis in 1881, when Italy formed the Triple Alliance with Germany and Austria.

**Irotragabilis**, Doctor, see ALEXANDER OF HALEB.

**Irrigation**, see also DRY FARMING.

**Irrigation** (Lat. *in* and *rigare*, to water) is the artificial application of water to land, as contrasted with watering by manual labour. I. is of great antiquity, as is shown by many I. works in India, Egypt, and China. (See also under IRRIGATION). No trace of scientific I. is found in the sculptures and paintings of ant. Egypt, but in works of as early a date as 2000 B.C. the practice of baling up water is represented. Among the simpler forms of water-raising machinery the following may be mentioned: a pole with a bucket at one end of a crossbeam and a counterpoise at the other (known in India as a 'denkli', or 'pneottah', in Egypt as a 'shaduf') largely used in the Nile dist.; rude waterwheel, consisting of earthen pots on an endless chain which runs round the wheel, is termed a 'sukya' in Egypt, and a 'harak' in N. India. By means of this a pair of oxen can raise water as far as 18 ft., and keep from 5 to 12 ac. irrigated. The 'churras' of India is a large

leather bag, suspended from a rope which passes over a pulley and is raised by a pair of bullocks which go up and down a slope equal in length to the depth of the well. I, which is effected by means of canals naturally depends on the discharge of the riv. in connection. When the riv. varies very much in vol., being very low in the dry season and flooded in the wet, a complete control of the water is necessary for the engineers, and the canal is therefore very costly. Such is the system on the Cuttack Canal, in connection with the Mahanadi R. The canals of Lombardy, on the other hand, are much less costly, as there is no great variation in the rivs on which they depend, the Ticino and Adda, owing to the restraining influence of Lakes Maggiore and Como. The canal

electric power. Today the U. S. A. ranks third in the irrigation countries of the world. India has about 55 million ac.; China about 50 millions, and the U. S. A. over 20 millions. In Egypt I. works have been carried out on a very large scale, the delta formed by joining Cairo, Rosetta, and Damietta is intersected by many channels, and much benefit has resulted. Lower Egypt has been irrigated by a dam constructed at Assut in 1902, which, however, failed in very dry seasons. The difficulty was partly met by raising the height of the barrage so as to hold back the waters, but as further areas came into cultivation it became necessary to construct a feeding lake. This was accomplished by constructing the Aswan Dam at a cost of 4,000,000 and thus creating a



from "In This Land" by H. G. Pott

#### IRRIGATION IN JAPAN

Beyond the tea pickers can be seen the small field from which the barley crop has been harvested and which are flooded for the re-germination of the rice shoots.

system of N. India contains works of hydraulic engineering unsurpassed in any country. In the S. of India I. is always required for the rice and sugar cane crops, though maize and millet can be grown without any such aid. Generally speaking, the other districts of India can manage without I. in good years. When most of the rain-watered lands of the U. S. A. had been taken up by settlers, the problem of the so-called arid lands came into prominence. There were vast areas in the Middle and Far W. states and in some parts of the S. states, deficient in water. Companies were formed solely for irrigation purposes, and to fix services to intending settlers, and under the Reclamation Act of 1902 the U. S. Gov. set aside a sum from the sale of public lands to finance great irrigation projects. Water rights were then sold to the settlers. In many places enormous dams have been built, and these, in turn, have proved valuable, because of hydro-

electric of 1000 million tons of water. The masonry dam at Alicante in the Monegre R. dates from 1779, and is said to have a capacity of 130,000,000 cubic ft. of water. In Italy, Spain, and in the S. of France I. is extensively carried on. The newly constructed Hume Reservoir at the junction of the Murray and Mitta Mitta rivers, stores 11 million cubic ft. of water which runs on a catchment area of 6000 sq. m. of mountainous country on the border of Victoria and N. S. W. (see MURRAY RIVER). Experience has shown that for successful I. a thorough system of drainage in conjunction therewith is a necessity. This principle was overlooked at first in modern works, and the complete saturation of some districts in consequence had a prejudicial effect on their fertility. Generally speaking the water used in I. not only supplies the moisture so necessary for vegetation, but fertilizes the soil by furnishing such mineral constituents

as salts of potash and soda, sulphates of lime, soluble silica, etc. In proportion as the water is rich in these, the effect on the soils is similar to that produced by a dressing of bone-manure. Sewage water is unquestionably even more valuable for irrigating purposes than ordinary water, owing to the large amount of putrefied animal and vegetable matter contained therein. The drainage of many trns. is thus turned to a profitable use at the present time. Various systems of I. are used to suit the special requirements of the case, one of the following being generally used in England: (1) Bedwork I.; this is the most effective system, but is also the most costly. (2) Catchwork I., in which the same water is used many times. (3) Subterraneous I., in which the water is drawn up through the soil to the surface. This is applicable only to level surfaces. (4) Warming I., in which the water is allowed to stand on the land until it has deposited the mud, etc., contained in it. The proper management of water-meadows requires great care and skill. There must be neither too much nor too little water; the flow must be regulated with exactitude, etc.

*Irrigation problems of the British Empire.*—It was estimated by F. S. Harris (*Soil Alkali*, New York, 1920) that in 1920, about 100,000,000 ac., or 7 per cent of the total area of the earth's surface under cultivation, was farmed by I. Since that year thousands of additional acres have been added, and it is thought that the area of land under I. will continue to increase. This is probable because nearly one-third of the earth's surface receives only 10 in. of rain or less annually, and over another third the rainfall is between 10 and 20 in. Over most of this latter area little if any additional water is needed, except for intensive crops, although special methods of cultivation, aimed at moisture conservation and known as 'dry farming' have to be adopted. But on land receiving less than 10 in. I. is generally essential if any kind of profitable crop production is to be undertaken. The geographical distribution of regions of deficient rainfall compiles a considerable proportion of the Brit. Empire and its mandated ters. (particularly N. Tanganyika). The main areas concerned are parts of Canada W. of the 100th meridian; N.W. India up to the Ganges; most of Australia; Palestine; considerable portions of S. Africa; N. Tanganyika; and the Sudan. Within these areas the supply of I. water is necessary for arable farming. The successful development of a stretch of land for I. farming and the maintenance of the fertility of the soil involves a constant attention to economic, engineering, and scientific factors. The engineering problems connected with the construction of dams, main and branch supply canals, drainage ditches, and pumping stations, like the economic factors, are specific to each dist. and are executed in accordance with fixed principles. The scientific factors comprise the questions of the composition of the water available for I. and the chemical composition and physical

properties of the soil. They apply not only to the development of new areas, but also to the maintenance of the fertility of existing I. areas. The scientific factors relate to the concentration of soluble salts (sulphates, chlorides, nitrates and carbonates of sodium, potassium, and magnesium, and chloride and nitrate of sodium) in arid conditions; the effects of soluble salts on soil fertility and on the physical state of the soil; and the tolerance of vegetation to alkali conditions. The complete cycle of soil changes which are traceable may proceed rapidly or be so slow that a noticeable change occurs only over a considerable period of years; but sooner or later the danger of deterioration confronts every irrigated area. Thus the famous irrigation of the Nile Valley, where fertility has been maintained for centuries, now appears to be showing the first signs of deterioration owing to a change in cultural methods. In the old or basin system of I., after the winter crop of wheat or *berseem*, the land remained fallow from May to Aug. Economic factors, in particular the extension of the area under cotton and maize, have necessitated perennial I., the necessary water for these summer crops being held by the Aswan dam and delivered as required. Under this system the frequency of the *sheraqui* or summer fallow period is much diminished, with the result that difficulties in cultivation and decrease in yield of the more sensitive crops are beginning to creep in. A. Howard and G. L. O. Howard have summarised the principles underlying water saving for the wheat crop in India as follows: (i.) I. water must be spread over the largest possible area; (ii.) it must interfere as little as possible with the natural aeration of the soil; (iii.) heavy waterings reduce the proportion of grain to total crop and increase the growth period; (iv.) a limited water supply encourages deep root development; and (v.) the soil moisture must be conserved as far as possible by a surface mulch of dry soil. The problems of I. in the Brit. Empire are being faced in different ways in different parts; but it is evident that I. is not simply a matter of providing a water supply; it necessitates constant vigilance by soil experts, otherwise deterioration sets in. See B. A. Kren, *Memorandum on Irrigation Practice and Problems* (Empire Marketing Board pamphlet), 1927.

See Sir C. C. Scott-Moncrieff, *Irrigation in Southern Europe*, 1868; W. Willcocks, *Egyptian Irrigation*, 1899; R. Buckley, *Irrigation Works in India*, 1905; Sir Hanbury Brown, *Irrigation: its Principles and Practice*, 1907; F. E. Kanhack, *Irrigation Engineering*, 1921; E. Hawks, *Wonders of Engineering*, 1929; O. Israelson, *Irrigation Principles and Practice*, 1932; E. Hill, *Water into Gold*, 1937.

**Irritability in Plants, or Sensitiveness**, is the manner in which they respond to the action of external forces such as (1) gravity, (2) light, (3) mechanical contact or pressure, (4) moisture, etc. Response to gravity is known as geotropism, and to light, heliotropism; and members are



positively or negatively geotropic or heliotropic according as they grow towards or away from the force. Thus roots are negatively heliotropic and positively geotropic, and shoots are just the reverse. Instances of irritability to contact are the leaves of the sensitive plant sundew, the stamen of *Berberis*, and the lobes of the stigma of the musk, which close together when touched. Response to presence of moisture is shown by growing roots, which are said to be positively hydrotropic.

**Irritant Poisons, see under POISONS.**

**Irsina**, tn. of Italy, formerly known as Montepeloso, 24 m. N.E. of Potenza in the prov. of Basilicata. Pop. 7600.

**Irthingborough**, par. and vil. in Northamptonshire, England, on the R. Nen, and 2 m. N.W. of Higham Ferrers. It has large ironstone quarries, and manufs. of boots and shoes. Pop. 5000.

**Irtysh**, or **Irtys**, riv. of Siberia and a trib. of the Ob or Obi. It rises in the Altai Mts. of China, flows N.W. through Lake Zaisan, and joins the Ob 180 m. N. of Tobolsk. It is navigable during about eight months in the year for some 2000 m. Length 2500 m.

**Iruks**, tribe, numbering in all about 86,000, dwelling in the Nilgiri hills, Arcot, the forests of S. India, and other places in the vicinity.

**Irun**, tn. in the N.E. of Spain, in the prov. of Guipuzcoa, on the l. b. of the Bidasoa. It was a garrison tn. and the most important custom-house in Spain; but suffered tragically in the civil war being almost wholly destroyed, in 1936, in the struggle for San Sebastian. There are hot mineral springs, iron mines, and potteries. Pop. 12,000.

**Iruña, see PAMPLONA.**

**Irvine**: (1) Par., royal burgh, and seaport of Ayrshire, Scotland, situated on the R. Irvine. Its prosperity has increased since the improvement of the harbour in 1873. It has an academy, a tn. hall, a statue to Burns, and is the bp. of James Montgomery, the poet, and John Galt, the novelist. Elizabeth Buchan founded here her religious sect, the Buchanites, in 1779. I. exports iron, coal, and chemicals. Ship-building is carried on, and there are engineering works, steam saw-mills, tanneries, iron and brass foundries. Pop. 12,000. (2) Riv. in Ayrshire, Scotland, which rises on the borders of Lanarkshire, flows W., dividing the dists. of Cunningham and Kyle, and empties itself into the firth of Clyde. Length, 30 m.

**Irving, Edward (1792-1834)**, Scottish divine, b. at Annan, Dumfriesshire. Having been educated at Edinburgh Univ., he became a master at Haddington (1810) and at Kirkcaldy (1812). He here taught Jane Welsh (afterwards Mrs. Carlyle), and fell in love with her, but he was already engaged to a Miss Martin, whose family prevented him from breaking off the engagement. In 1815 he obtained a licence to preach from the Church of Scotland, and four years later became an assistant to Dr. Chalmers, then in Glasgow. In 1822 I. became the minister of Cross Street Chapel, Hatton Garden, London, and his sermons became extraordinarily

popular. In 1823 he pub. *For the Oracles of God and For Judgment to Come*, in which he declared his belief in the second personal advent of Jesus Christ. His popularity waned as his views developed. His belief in Christ's oneness with men in the attributes of humanity was misinterpreted, and he was accused of imputing sinfulness to Christ. In 1830 he was tried before the London Presbytery, and two years later was deposed from the ministry. In conjunction with Henry Drummond he estab. the 'Holy Catholic Apostolic Church,' the adherents to which came to be known as 'Irvingites.' He and his followers made a particular study of the Apocalypse, and recognised orders of apostles, prophets, evangelists, and angels. I. became 'chief pastor' of this new sect's first church in Newman Street, but died shortly afterwards in Glasgow. His complete works were pub. in 5 vols. by Gavin Carlyle (1864-65). See Carlyle's *Reminiscences*, 1881; and biographies by W. Wilks, 1854; and Mrs. Oliphant, 1862.

**Irving, Sir Henry (1838-1905)**, Eng. actor, whose original name was John Henry Brodribb, was the son of a Somersetshire tradesman, who afterwards settled in London. The boy's tastes always inclined to the stage, and, while he was a city clerk, he took lessons in elocution, fencing, and dancing, and devoted such leisure as he had to reading and studying plays and frequenting the theatres. At the age of eighteen he threw up his job and secured an engagement in a stock company at Sunderland and, later, another at Edinburgh. He remained in the provs., learning his art, until 1866, when he made his London debut at the St. James's Theatre as Doricourt in *The Belle's Stratagem*. At the same theatre, in the following Dec., he played Petruccio to the Katherine of Ellen Terry. He was now firmly estab. as a London actor, but he did not achieve any marked success until 1870, when his performance of Digby Grant in *The Two Roses* made him popular. His Alfred Jingle in *Pickwick* added to his laurels, but he first became famous when he played in *The Belts* at the Lyceum (Nov. 25, 1871). In 1874 he played Hamlet for two hundred nights, and with this performance, around which a controversy arose as to his rendering, he rose to the head of his profession. Four years later he became manager of the Lyceum, and, with Ellen Terry as his leading lady, made it the first theatre in the country. His prin. successes were Hamlet, Shylock, Benedick, Malvolio, Dr. Primrose (in *Olivia*), Landry (in *The Dead Heart*), King Lear, Becket (in Tennyson's play), and Corporal Brewster (in *A Story of Waterloo*). I. was not a good man of business; his production expenses were heavy, his generosity unbounded, and when in 1898 his store of scenery was burnt down, he had to part with the leasehold of the Lyceum, though he continued to act there until 1902. In the following year he played in *Dante* at Drury Lane, then went for the eighth time to America, made a tour in England, and in April 1905 revived *Becket* at Drury Lane, where he was

enthusiastically received. He went on tour again, but his health was broken, and after a performance of *beckat* at Bradford on Oct. 13 he collapsed and died a few hours later. He was buried in Westminster Abbey. I was the greatest figure in the theatrical world of his day. He had many mannerisms but against these he had dignity and a great conception of tragedy. I's conception of the art of the theatre differed fundamentally from that of G. B. Shaw who was then a prominent dramatic critic, and for details of this rather controversial matter one should consult both Gordon Craig's *Henry Irving* and Shaw's *Letters to Ellen Terry* (1931). His dominant quality was magnetism, not that of all-mastering eloquence, for his voice was neither dominant nor strong but rather of passionate yet quiet intensity. He had strongly marked physical handicaps. His troubles with speech were not confined to the weakness of his voice, for there was also the strange pronunciation which he adopted in moments of excitement, as "God" for "God" and interpolated grunts and groans, all of which lent them clues to his feelings. But these disabilities he overcame in the end by patient effort and towards the latter part of his life he was a model of pronunciation. But he could never endow himself with a fine voice or great physical strength; hence, while his Hamlet and Richard III and Iago and Shylock were perfect, his Macbeth and Lear—though both splendid—tired him out, and his Othello was almost a failure. I had a loyal and generous side to his nature and as a man was the embodiment of courtesy and distinction. He was a great man as well as a great actor and it was often said of him that he would have risen to eminence if he had followed any other profession. But it is impossible to imagine him in any other, for all his thoughts all his deeds, all his very being were concerned with his acting and his theatre. I was the first actor to be offered a knighthood and after having declined it twelve years earlier (in 1855) he accepted the honour. He married the daughter of Surgeon General Daniel O'Connell in 1834 but they separated five years later. Lady I (who died in 1933) was the mother of Henry Brodribb I (q.v.) and Frances I (q.v.). There are six lives in living those by Bram Stoker, 1906; A. F. Leitch, 1908; and Gordon Craig, 1930. See also Henry Irving in *Art of Acting*, talk by Philip C. Muns (cat. in *The Listener*, Oct. 21, 1931).

**Irving, Henry Brodribb** (1870-1919) Youngest son of Sir Henry I. Born at Putney, London (older son of Sir Henry I (q.v.)). Educated at Marlborough and New College, Oxford. He was called to the bar in 1891, but had previously acted in the Garrick Theatre (cost of *School*, Sept. 1891). He joined Ellen Terry's company and met Dorothea Bard whom he married in 1896. He repeated many of his father's parts, but added a reputation in comedy—e.g. *Crichton* the butler in *Barnes' Admirable Crichton*, 1902. Acted in America, 1906; Australasia, 1911. For the last six years

of his life lessee of Savoy Theatre. His hobby was criminology. He wrote *Life of Judge Jeffreys* (1898), *Lost of Itamar* (1900), *Criminals* (1918), *Last Studies in Criminology* (1921). See A. Briction, *H. B. and Laurence Irving*, 1922.

**Irving, Laurence Sydney Brodribb** (1871-1911) Young actor, younger son of Sir Henry I. Educated at Marlborough and in Paris. He was taken to Russia by his mother and spent three years there. His first appearance on the stage was at Dundee in 1891 under Benson. Wrote *Peter the Great* for his father, 1898. His best impersonation was Lord Skulch in *Lupin* by Melchior Lengyl. I and his wife (Mabel Hackney) were drowned in the sinking of the steamer *Empress of Ireland* in the St. Lawrence R. on May 29, 1911.

**Irving, Washington** (178-1899) American author born in New York of a father who claimed Scottish descent and of a



WASHINGTON IRVING

Scottish mother. He was given an inferior education after which for his health's sake he visited Europe before settling down in the city of his birth. After some essays in the monthly periodical *Salmagundi* he published in 1801 a *History of New York*, by Diedrich Knickerbocker, in admirable burlesque. In 1811 he came to England where he remained for many years, and he soon became dependent on his pen for a livelihood. His *Sketch Book* appeared in 1820, and was well received on both sides of the Atlantic, his *Town and Country* and *Westminster Abbey* being singled out for especial praise; this was followed by *Bracebridge Hall* (1822), and *Life of a Traveller* (1824). As the result of a sojourn in Spain he wrote *The Life of Columbus* (1828), *The Conquest of Granada* (1829), *The Alhambra* (1832), and other works, which were very popular. I returned to New York in 1832, where he was enthusiastically wel-

comed. His later books include biographies of Goldsmith, Mahomet, and Washington, and *Recollections of Abbotsford and Neustead Abbey*. He had the gift of style in no small degree, and in all his work there is charm, but he is seen at his best in his shorter efforts. His fame rests mainly on the *Sketch-Book*. The best ed. of his works is the 'Geoffrey Crayon' in 26 vols. (New York, 1880). See lives by his nephew, P. M. Irving, 1862-64; G. S. Hollman, 1925; see also S. T. Williams (ed.), *Washington Irving and the Storrows*, 1933; Van Wyck Brooks, *The World of Washington Irving*, 1946.

**Irvingites**, see IRVING, EDWARD, and CATHOLIC APOSTOLIC CHURCH.

**Irvington**, tn. of Essex co., New Jersey, U.S.A., 3 m. S.W. of Newark. It manufs. tools, ropes, steel, wall-papers, etc., and has smelting-works. Pop. 55,300.

**Irwell**, riv. of Lancashire, England, rising 2 m. S. of Burnley, and flowing, in a tortuous course of 40 m., through Bacup, Rawtenstall, Bury, and Manchester, to the Mersey at Irlam. The Manchester Ship Canal is now included in the lower part of its course. Length, 40 m.

**Irwin, Edward Frederick Lindley Wood**, first Baron, see IRVING, VISCOUNT.

**Irzykowski, Karol**, (b. 1873), Polish writer and literary critic, b. at Blaszakowa. In his *Pulubia and Dreams of Maria Dumin*, which appeared in 1904, he showed himself a precursor of Proust and Breud. His earlier and precocious books were followed by *Poems and Dreams* (1907), *Devil Knows Where* (1922), and various essays and studies. In later years he devoted himself to literary criticism.

Is, see Iffr.

**Isaac**, only son of Abraham and Sarah, b. in their old age (Gen. xvii. 17). For the story of his being offered as a sacrifice and the miraculous intervention of Jehovah see Gen. xviii. When forty years old he married his cousin Rebecca, who bore him twin sons, Esau and Jacob. He seems to have lived a peaceful, uneventful, nomadic life, and to have died in Hebron at the age of one hundred and eighty. See ABRAHAM. See also G. Rawlinson, *Isaac and Jacob* (Men of the Bible series), 1890.

**Isaac I.** (Comnenus), emperor of Constantinople (1057-59), the first of the house of Comneni. He had served in the army, and on the deposition of Michael VI. was declared emperor by the soldiers. He repaid the finances, forced the clergy to contribute to the state revenue, and repelled the attacks of the Hungarians in the N. In 1059, being overcome with a serious illness, he abdicated and retired to the monastery of Studion, where he died in 1061. His *Scholastika* and other works on Homer are extant.

**Isaac II.** (Angelus), emperor of Constantinople (1185-95 and 1203-04), succeeded Andronicus I. In 1197 his brother Alexius seized the throne by force and I. was blinded and imprisoned. Eight years later he was restored to the throne, but was too weak, mentally and physically, to rule, and died in 1204, shortly after Mourzouphes, his general, usurped the throne.

**Isaacs, George Alfred** (b. 1883), Brit. politician and trade union official, b. in London. Former member of the council, and mayor of Southwark. Elected Lab. member of Parliament for the Gravesend div. of Kent 1923-24 and for Southwark (N.) in 1929-31 and since 1939. Parl. private secretary to the Lord Privy Seal in the second Labour gov. (1929) who had special charge of the unemployment problem. Also parl. private secretary to the secretary of state for dominion affairs (1930) and, on the advent of the first national gov., acted in a similar capacity to the leader of the Labour opposition. Member of the executive of the Trades Union Congress, 1934; parl. private secretary to the first lord of the Admiralty, 1942-45; P.C. 1945. Member of the Royal Commission on Workmen's Compensation, whose recommendations resulted in the passing of the National Insurance (Industrial Injuries) Act, 1946. Secretary of the National Society of Operative Printers and Assistants (*Natsopa*); past president of the Printing and Kindred Trades Federation; chairman of the Trades Union Congress General Council, 1945; president of the World Trade Union Conference, London, 1945. Minister of Labour and National Service since 1945. Editor of *Natsopa Journal*. Pub. *The Story of the Newspaper Printing Press*, 1931.

**Isaacs, Sir Isaac Alfred** (1855-1935), Australian lawyer and statesman, b. and educated at Melbourne. Admitted to the Victorian Bar, 1880. Q.C. 1889. Member of Legislative Assembly, Victoria, 1892. Solicitor-General of Victoria, 1893, and Attorney-General, 1894; entered Commonwealth Parliament, 1901. Was a member of Convention which framed Commonwealth Constitution. Attorney-General, Commonwealth of Australia, 1905. High Court judge, 1906. Knighted, 1928. Chief Justice, Australian Commonwealth, 1930-31. Governor-General of Australia, 1931-36, he being the first Australian to be so appointed.

**Isaacs, Jorge** (1837-95), Colombian poet and novelist; b. at Cali; son of an Eng. Jew turned Christian and planter and married to a Sp. woman. Attended school at Bogotá; at sixteen went to London to complete his education. In 1864, his first vol. of poems was enthusiastically received. In 1867 he pub. *Maria*, an 'idyllic romance,' somewhat autobiographical. Filled a diplomatic post in Chile. Was a member of Congress, and director of public instruction at Ibagué—where he died.

**Isaacs, Sir Rufus Daniel**, see READING, MARQUESS OF.

**Isabela**: (1) N.E. coast prov. of Luzon, Philippines, area 5394 sq. m. It is mountainous and covered with forests. Coffee, sugar-cane, rice, maize, and tobacco are cultivated, and cattle-raising is carried on. Pop. 76,000. The cap., Ilagan, is 150 m. N.N.E. of Manila. (2) Trading centre in Pueblo, Negros Occidental prov., Philippines, 37 m. S. of Bacolod. Pop. 13,000. (3) Vll. and port on the N. coast of the republic of Haiti, W. Indies, and 36 m.

W N W of Santiago Founded by Columbus (1493), the first European settlement in the New World. (1) 1493 on the NW coast of Puerto Rico W Indies, 10 m NE of Aguadilla in the prov of that name Pop 23,065

**Isabella** (1292-1358) daughter of Philip IV of France, and wife of Edward II of England, whom she married in 1308. She sided with the barons against Edward and the Despençers, and in 1326, having been sent over to France to settle a dispute between her husband and her brother, the 11 king, she collected forces and, being joined by Roger Mortimer her lover and other barons, attacked and defeated the king who was probably put to a cruel death. She and Mortimer ruled supreme for a time, but in 1330 Edward III had Mortimer executed and imprisoned his mother in Castle Rising for the rest of her life.

**Isabella** (1491-1504) Queen of Castile and Leon (1474) wife of Ferdinand V of Aragon. In 1474 she married Ferdinand and became the crown of Castile and Aragon. Ten years later they occupied the throne of all Spain. Her father and mother were both descendants of John of Gaunt of England. She sympathized with Columbus's ambition. See I. L. Plunkett *Isabella of Castile and the Making of the Spanish Nation* (1911) and life by A. S. Wuthrich, 1936.

**Isabella II.** (1830-00) *b* in Madrid was the eldest daughter of Ferdinand VII. She was proclaimed Queen of Spain at the age of three in the death of her father, who had refused the Cortes to repeal the Salic law. Her title was disputed by Ferdinand Don Carlos, and her reign was one continual succession of quarrels and intrigues. In 1846 she married her cousin Prince Francisco de Assis de Bourbon (1822-1907) from whom she separated in 1870. In 1868 she had been forced into exile and abdicated two years later in favour of her son Alfonso XII. See *P. de Fugère, L'Espagne de la Restauration à l'Espagne*, (2nd ed.) 1911.

**Isabey, Jean Baptiste** 176-18 ) Fr  
portr at painter b at N y He studied  
under Dumond and David and was em-  
ployed at Versailles where he painted the  
portraits of most of the celebrities of his  
time He painted many of the revolu-  
tionaries including Barre and Saint-  
Just and was patronized in turn by  
Napoleon and Josephine in the Bour-  
bon sovereigns Apart from portraits, his  
best known works are *Isabey's Boat*  
1796 and *Review of Honor by the First*  
Con ul See list by M L Ligny, 1899

Isaeus, Attic orator, son of Diagoras, b. at Chalcis in Euboea. He lived between 420 and 400 B.C., and was the fifth of the ten Attic orators. He was a pupil of Isocrates, and wrote judicial orations for other people and founded a school of rhetoric at Athens in which Demosthenes is supposed to have been his pupil. Eleven only of his speeches are extant. They throw an important light on Attic law. See Sir R. C. Jebb *Attic Oratory from Antiphon to Isaeus*, 1893. Sir T. W. Higginson, *Isaeus*, 1901.

**Isaiah, son of Amoz** was the greatest and most important of the early Jewish prophets. He was of high social rank, and an inhabitant of Jerusalem. We learn from ch. viii 3 that he was married and the father of a family. The heading of

the book which bears his name (I) tells us that he prophesied from the year of King Uzziiah's death (740 B.C.) through the reigns of Jotham, Ahaz, and Hezekiah, and a late tradition (cf. Heb. vi. 37) tells us that in the days of Manasseh he suffered death by being sawn asunder, but no mention of such a fate is to be found in the Book of Kings. The account of the vision by which the prophet was called to his work is given in ch. iv. The book which bears his name has during the last century been the subject of much discussion. Aben Ezra was the first to call attention to the fact that the book was capable of subdiv. and later critics have criticised on the work of subdiv. most vigorously. The chief break comes after ch. xxxix (chapters I to lxxi contain many passages that seem conclusively to prove them to be post-exilic. The people no addressed is these who have already suffered the punishment of their sins and who are in exile. Further in the discussion on the rightness of Uziah's who reign more than a century after the death of I is added to a sign that Uziah will fulfil his promises in the near future. This latter section is itself generally divided into two parts, viz. I-iv and lv-lxxi known perfectly as Deuter. Isaiah and Lito Isaiah of which the second is the earlier in date. The question of the subdiv. of the earlier part of the work is more difficult and complicated. If we sum up certain portions such as xii-lvi, xlvii, xxxv, xxxix etc. are shown to be post-exilic by the fact that they presuppose the conditions of later times. It would be impossible here to speak of the more elaborate subdiv. such as those of Cheyne (*The Isaiah* etc.) but most scholars are agreed in making a fourfold div. of the prophetic actually attributed to I. These divs. correspond to four invasions of Palestine. The first is that of Tiglath-Pileser, prophesied in ch. vi to the beginning of x and possibly also in certain later parts. The second that of Sennacherib, and Sennacherib ch. xxxiv, contains the first promise of the coming prince whom later ages have identified with the Messiah. There is much doubt as to the extent of the third invasion, that of Sargon whether or no it included Judah. Driver, Robertson Smith, and others hold that it did not and assign to this period xx-xxi 10; Cheyne, Sayce, and others hold the opposite view, and give chs. x-31 and xlii to the last invasion, that of Sennacherib, belong most of the chapters from xx-xxxi. See G. H. A. Smith *Prophecy of the Old Testament*, S. J. Driver, *Isaiah*, 1888. G. A. Smith (commentary in *The Expositor for a Bible*, G. W. Wad, *The Book of the Prophet Isaiah* (Westminster Commentaries), 1911 and works by C. I. A. Dillmann, E. Dichtelheim, I. K. Chyrene, etc.

**Isala**, see **ISSERL**.

**Isandlwana**, or **Isandula**, isolated kopje in Zululand, 60 m. W.S.W. of Ulundi, S. Africa. Here, during the Zulul War, Col. Durnford's column was surprised, on Jan. 22, 1879, by 20,000 Zulus under Cetewayo, and annihilated. Col. Durnford and Pulleine being killed.

**Iear**, riv. of Bavaria, rising in the Tyrol, close Alps and flowing N. and N.E., pasting Munich. It enters the Danube opposite Deggendorf. Length 180 m.

**Isaure**, **Clemence**, see **CLEMENCE ISAURE**.

**Isauria**, anct. dist. in Asia Minor, bounded by Pisidia, Lycaonia, and Cilicia. In Rom. times, the inhab. were a barbarous race and daring sea-robbers. They were overcome by P. Servilius in 78 B.C., but soon rebelled and were a constant source of trouble. The rebel Trebelianus, in the third century A.D. assumed the title of emperor, but was overpowered and executed. The Isauri are said to have been effectually subjugated in the reign of Justinian in the sixth century. I. has had the honour of producing two emperors, Zeno (A.D. 474-491) and Leo III. (718-741). See W. M. Ramsay, *Historical Geography of Asia Minor*, 1904.

**Ischalis**, see **ISCHIA**.

**Ischia** (anct. *Ænarca*), very fertile and picturesque is. in the Bay of Naples, Italy. In the centre is an extinct volcano, from which the surface gradually slopes all around towards the sea. Corn, fruit, and wine are grown; straw plaiting and fishing are carried on. The is. was disturbed by earthquake shock in 171 B.C., 92 B.C., A.D. 1302 and 1883. The chief tns. are I., the cap. and Casamicciola, visited for its hot springs. I. was sacked by the pirate Barbarossa in 1541 and captured by the duke of Guise in 1547. It was occupied by Nelson at one time, and Murat took refuge here in 1815. It was originally colonised by the Greeks, who called it *Pitheusa*. Pop. (is.) 29,500; (tn.) 9200. See A. Rittmann, *Geologie der Insel Ischia*, 1930.

**Ischl**, or **Bad Ischl**, magnificently situated inland watering-place of Upper Austria, 30 m. E.S.E. of Salzburg. Chiefly known for its medicinal baths and as the summer residence of the former Austrian Imperial family. An important industry here in salt. Pop. 10,300.

**Iseo**, **Lago d'**, picturesque lake of Italy, 15 m. long and about 2½ m. broad, at the foot of the Alps, between Bergamo and Brescia. It is traversed by the R. Oglio.

**Iseran**, pass in the Alps (9085 ft.), connecting the valleys of the Arc and the Isère. The neighbouring peak, Mt. Grand Paradis, was for years confused with Mt. Iseran, owing to the fact that the Montagnards call not a peak but a series of pastures a *mont* and that the pastures here were called Mt. Iseran.

**Isère**: (1) dept. in the S.E. of France, between the Rhone and Savoy, formed out of the anct. prov. of Dauphiné. The S. portion is very mountainous, the highest point being the Alguille du Midi (13,075 ft.), which rises on the S.E. frontier. The N. and W. of the dept. is formed of plateaux broken by hills and valleys. The R.

Rhone surrounds it on every side but the S., while its trib., the I., flows through it. The dept. is divided into three arrons., Grenoble, La Tour du Pin, and Vienne. The cap. is Grenoble. Silver, lead, coal, and iron are mined; slate, stone, and marble quarried; and gloves, silk, paper, and cement manufactured. Green Chartreuse was manufactured in the monastery 11 m. N. of Grenoble. Area 3179 sq. m. Pop. 573,000. (2) Riv. rising in the Alps, and, winding W. and S.W. for 180 m. (100 m. of which are navigable) through the depts. of Savoye, I., and Drôme, joins the Rhone a few m. above Valence.

**Iserlohn**, tn. of Westphalia, Prussia, 36 m. by rail S.E. of Dortmund. It has manufs. of cutlery, bronze, and other metal articles, furniture, and chems. Pop. 31,000.

**Isernia** (*Æsernia*), tn. in the prov. of Campobasso, Italy, situated in the Apennines, 50 m. N.E. of Naples. It is notable for its Rom. antiquities and near the tn., and especially for a long subterranean aqueduct, which still supplies the industries and fountains of I. with water. There is, too, an anct. Rom. bridge outside the tn. Nearly is a chapel to SS. Cosmas and Damian. I. is identical with the anct. Samniti tn. *Æsernia*, which was conquered and colonised by the Romans c. 260 B.C., and the massive polygonal walls which form the basis of the existing walls in nearly their entire circuit are attributed to the Samnites. An earthquake in 1800 overthrew the cathedral besides doing other damage. In 1799 the tn. was stormed by the Fr. and in 1860 it was sacked in a Bourbonist revolt. I. is the seat of a bishopric. It has manufs. of woollens, pottery, and tiles. In the Second World War some damage was sustained by the churches of S. Maria della Benedettina and S. Maria della Monache, but the Rom. bridges were, for the most part, spared and the tn. suffered comparatively little. The Gers., however, stole the entire coin collection. Pop. 15,000.

**Istahan**, see **ISPAHAN**.

**Isherwood**, **Christopher**, Eng. novelist, b. at Disley, Cheshire, 1904. His father, who was killed at Ypres in 1915, was an Army officer and I.'s early years were spent in various garrison tns. He was educated at Repton School and Corpus Christi College, Cambridge. After temporary employment as a private secretary and tutor, he went in 1929 to Berlin where he stayed until Hitler came to power in 1933. From schooldays he had formed a close friendship with W. H. Auden (q.v.) with whom he collaborated in three plays notable for their expressionist technique—*The Dog beneath the Skin* (1935), *Ascent of F.6* (1937), and *On the Frontier* (1938). In 1938 he went with Auden to China for the purpose of writing a book about conditions there. The result of this further collaboration was *Journey to a War* (1939). His first novel, *All the Conspirators* was pub. in 1928, followed by *The Memorial* (1932), his next novel *Mr. Norris Changes Trains*

(1935) showed a considerable advance and established his reputation as a writer with a capacity for realistic and humorous perceptions and a clear prose style. In Jan 1919 he went to the U.S.A. with the intention of becoming a permanent resident. His interest in metaphysical studies allied him with the Vedanta Society in Los Angeles, and he has collaborated in a translation of the Bhagavad Gita. Living in California he has also worked as a script writer for films. His autobiographical work, *Lions and Shadows*, was published in 1935.

**Ishu, Kikuduro, Viscount** (1866-1945), Japanese diplomat. Studied law at Tokyo. Was in the consular service and afterwards he became Vice-minister of foreign affairs 1908. Ambassador, 1912 till mid minister of foreign affairs, 1913-16. Viscount and member of House of Peers, 1916. Ambassador to U.S.A., 1917-19, and to France from 1920. Acting president of Council of League of Nations 1921. Delegate to Naval Disarmament Conference, Geneva. Killed, together with his wife, at their home in Tokyo in an American bomber attack, May 25, 1941.

**Ishum** (1) In the Onk Re-ion of the R S F S R, 120 m S S L of Loholsk on the Ishum R. It lies in an alluvial field in Dec. and the tallow-milling works spinning and weaving mills. Pop. about 7000. (2) Riv. of Siberia flowing in Kholmok Kizak S S R and flowing through fertile districts at a distance of 300 m. It joins the Irtys R. of Fobolsk. Its total length is 600 m.

**Ishmael**, son of Abraham by Hagar the Egyptian handmaid of his wife Sarah. On account of Sarah's jealousy at the age of fifteen years with his mother expelled from his father's house and driven into the wilderness, when a guardian angel preserved their lives and directed them to water (Gen. xxi 1-21). The boy grew up into a famous hunter, married an Egyptian woman and became the ancestor of a great nation. Mohammed claimed descent from him. Mohammed asserts that he is buried with his mother in the Kaaba at Mecca. (cf. Genesis xvi 12).

**Ishpeming**, city of Marquette Co., Michigan, U.S.A. Has large iron mines. Gold and marble are also found in the neighbourhood. Pop. 9400.

**Ishwar Chandra, Ishwar**  
**Isidore of Seville**, Isidorus Hispanensis (c. 606-666) Bishop of Seville and Spanish cardinal. He was educated in a monastery and became distinguished in his controversies with the Arians. In 699 he was elected bishop of Seville and became famous for his powers of administration and his learning in science, history, and theology. He was present at the councils of Toledo (700) and Seville (701), and it was his influence that altered the organisation of the church in Spain. He wrote an encyclopaedia from his own knowledge. It included law, science, history, and theology and helped to keep alive some knowledge of learning through the Dark Ages. Among his works are *Origines seu etymologiarum libri*, and a list of the

Goths and Vandals. See C. Dziedowski, *Isidorus und Hildefons als Literaturhistoriker*, 1898, and A. Schmickel, *Die positive Philosophie in ihrer geschichtlichen Entwicklung II Isidorus von Sevilla*, 1911.

**Isidorian Decretals, or False Decretals**, spurious amplification of the canonical collection in use in the Church of Spain in the eighth century. The author assumed the name of Isidore taking in addition the name of Mercurator. The collection is divided into three parts. The first contains seventy letters (forged) attributed to various popes. The second contains a collection of councils and the forged Donation of Constantine. The third a series of decretals from the Nicæan council. The object of the forged was to reform the canon law and to increase the authority of bishops against civil rulers. They were very skillfully composed, and were the cause of violent controversy.

**Isinglass**, variety of gelatin obtained from the dried swimming bladders of different fishes. It is used principally for culinary purposes and for clarifying beer and wine, and also for making cement and plaster. It is manufactured chiefly in Russia, Canada, Brazil, and the Indies.

**Isis**, (1) Egyptian deity, the goddess of fecundity, identified in Greek mythology with Ceres. She was the wife of Osiris and the mother of Horus and daughter of Nut or the Sky. Her story is one of great beauty and tragedy and is briefly as follows. Osiris, king of Egypt, was the victim of a conspiracy led by his brother Set, the god of evil. Osiris was entangled in a chest which was thrown into the Nile, carried away, and finally thrown up on the sea shore. Isis, after long search, found the chest, married over it, and him. It went to urge him to avenge his father. Meanwhile Set, in anger upon the chest, cut the body of Osiris into fourteen pieces and hid them dispersed over the land. Isis then revived herself by travelling from place to place, building a temple over each fragment of her husband's body as she found it. Osiris became lord of the other world and appeared to his son Horus and taught him the use of arms. Horus defeated Set and took him prisoner, but, being enraged because his mother gave Set his freedom, he cut off her head. Photh replaced it in the form of the head of a cow. The outstretched wings of Isis are frequently found in Egyptian decoration; she is often represented with the face of a woman and the horns of a cow, sometimes with the lotus on her head, and at other times hooded—the latter representing incidents in her career.

**Isis**, name applied by Oxonians to



ISIS

the upper part of the R. Thames, England. This name was used as early as 1607, for Camden mentions it. The popular belief that the name Thames is derived from the composition of Thame and Isis is incorrect.

**Iskander Beg**, see **ISKANDERBEG**.

**Iskanderun**, another name for **ALEXANDRETTA** (q.v.).

**Iskelib**, tn. of Asiatic Turkey, situated in the vilayet of Ankara, 100 m. N.E. of Ankara. Has an old castle, and there are salt-springs S. of the tn. Pop. about 15,000.

**Isle de Pasqua**, see **EASTER ISLAND**.

**Isle y Roja**, José Francisco de (1703-81), Sp. salarist, Jesuit priest, and a famous preacher, b. at Villa Vidanes, Leon. Lamphooned the ignorance of the Sp. priesthood in a novel entitled *Historia del famoso predicador Fray Gerundio de Campuzos*. The book was prohibited (1760) in consequence of the storm of protests raised by the victims, but he pub. a second part in 1770 unknown to his superiors. He also completed, shortly before his death, the trans. of *Gil Blas* into Sp. In 1850 his *Obras Escogidas* came out as vol. xv. of the *Biblioteca de Autores Españoles*. With the other Jesuits he was expelled from Spain in 1767, and went to Bologna, where he lived until his death. See B. Gaudeau, *Les Prêcheurs barbesques en Espagne au XVIII<sup>e</sup> Siècle*, 1891.

**Islam** (Arab *Islam* = 'surrender to God'), virtually the Mohammedan faith (see **MOHAMMEDANISM**). The term is used in a broader sense to refer to the general features—philosophical, religious, artistic and social—of Mohammedan culture, e.g. in Nietzsche's *Antichrist*, Renan's lecture *Islamism and Science* (pub. Eng. trans., 1896), etc. 'Moslem', 'Muslim', or 'Mussulman' (derived from Arabic *salam*, meaning 'to submit'; cf. *salaam*), as a substantive, means a Mohammedan and, as an adjective, 'of or pertaining to the Mohammedans'; and all Mohammedan communities of the world of Islam are Muslim or Moslem communities. The salient feature of I. is the remarkable homogeneous unity of the Moslems, a unity which is founded on their faith and on the language in which the Koran was written. The essential world of I. embraces Egypt, the Anglo-Egyptian Sudan, Saudi Arabia, Iraq, Syria, Palestine, Transjordan, Aden, Libya, Algeria, Tunisia, Morocco and Zanzibar— all Arab countries; and the non-Arab countries, Persia, Afghanistan, India (which has 75 million Muslims) and Malaysia. These countries do not exhaust all the existing Muslim pop.; they represent, however, most of the independent Muslim lands and the most important Muslim communities. There are also numerous Muslim communities in various European countries, e.g. there are estimated to be 25 million Moslems in Soviet Russia, in Yugoslavia (1½ million), in Albania (about 800,000); and, among non-European Muslim communities, are large elements in Liberia, China (over 20 million), and Madagascar (700,000), etc. Turkey is not included, for, by the Law of April 10, 1928, of the

modern Constitution, Turkey officially no longer regards herself as an Islamic state, Islamic teaching being forbidden in schools, while even instruction in Arabic is not tolerated. The religious orders in Turkey have been closed and religious exercises outside the mosques prohibited; though individual Turks are no doubt still loyal to the teachings of Mohammed and the mosques in fact still attract large congregations. Probably so remarkable a unity as characterises the Moslem faith would never have been achieved if the influence of I. had been restricted to the religious aspects of Muslim life. But unlike Christianity and other monotheistic faiths, I. supplies a political and social standard as well as a religious code. It provides standards for legal, social, and political conduct, and regulates the life of a Moslem throughout the entire complex of his economic and personal activities. Hence I. overrides the racial, national, or social distinctions in Muslim communities and in fact everything that savours of caste or class distinction is anathema to true I. The political consequences of this Muslim unity in the world's affairs, or, in other words, the existence of a homogeneous Muslim Empire began to lessen with the decline of the Caliphate. The Ottoman Empire did indeed provide a temporary if artificial and materialistic basis of unity, but it was only after the beginning of the present century that the idea of Muslim unity began once more to exercise an increasing influence upon international affairs. Today the Muslim peoples of Egypt, Iraq, and Persia are a political force in modern affairs. Though the world of I. has, to a considerable extent, felt the impact of W. ideas, it is still governed essentially by religion. The extreme asceticism of the Wahabi kingdom of Ibn Saud is an eloquent proof of this truth. Nothing, too, has been a stronger bulwark against Nazi influence in the Muslim world than the faith of I. Even in Persia, where, during the late Shah's reign, religious practices were not encouraged, the Constitution of 1925 maintained a limited religious-Islamic character and with the abdication of Shah Reza Pahlavi in 1911 religious restrictions were relaxed. Many of the Muslim peoples dispersed throughout the world have become assimilated to the political and cultural life of their country of adoption. This is especially true of the Arab immigrants in America; but, as indicated above, there remain more than a dozen Muslim, or partly Muslim, countries whose chief inspiration comes from I. and Islamic traditions. But it cannot be denied that generally speaking, occidental influence has been dangerous for I. W. methods, customs, and theories have been accepted for which there was no favouring historical and cultural background. Recognition of the superiority of W. science and methods induced many Arabs to break with Islamic tradition. This has involved a secularisation of native life in the Near Eastern countries; but the relaxing of hereditary ties with I. in such

advanced countries as Egypt and Syria has also been ascribed to the antagonism of Arab youth to the narrow-mindedness of the *ulama* (doctors of sacred law), whose interpretation of I. was retrogressive and opposed to all scientific advance. Yet this estrangement from I. is often only slight and many of the most advanced Arab thinkers of today realise that, without I., the future offers only poor prospects to those peoples whose spirit and intellectual life depend fundamentally on the Muslim faith. In the last two decades political nationalism has been the dominant factor in the political life of the specifically Arab countries. But even this nationalism has been and still is coloured by I., and indeed Arab nationalism, the ultimate objective of which is pan-Arabism (*q.r.*), could never be divorced entirely from I. Pan-Islamism, however, remains a mere dream, as remote from probability as a jihad waged in all the Islamic countries of the Near and Middle E. Prominent Islamic writers and thinkers, like the Persian Murtahid, Sheikh Al-Zinjanj, Dr. Taha Hussein, one-time Dean of the Faculty of Letters in Cairo Univ., and Dr. Yahya al-Dardiri all tend to see in a return to the Koran the chief remedy for Arab ill and their 'moral anarchy.'

See T. Carlyle, *Heroes and Hero Worship*, 1841; D. S. Margoliouth, *Mahomet*, 1905; L. Stoddard, *The New World of Islam*, 1921; S. H. Longrigg, *Four Centuries of Modern Iraq*, 1925; M. T. Titus, *Indian Islam*, 1930; and Khalid Adib, *Inside India*, 1937; Eugene Jung, *L'Islam et les Musulmans dans L'Afrique du Nord*, 1930; T. Arnold, *The Legacy of Islam*, 1931; H. A. R. Gibb (ed.), *Whether Islam? 1932*; C. C. Adams, *Islam and Modernism in Egypt*, 1933; Sir H. MacMichael, *The Anglo-Egyptian Sudan*, 1934; H. St. J. Philby, *Arabia of the Wahabis*, 1935; T. E. Lawrence, *Seren Pillars of Wisdom*, 1935; Freya Stark, *The Southern Gates of Arabia*, 1936; Sir R. Storrs, *Orientalism*, 1937; R. Landau, *Search for Tomorrow*, 1938; G. Antonius, *The Arab Awakening*, 1939; A. J. Arberry and R. H. Landau (ed.), *Islam Today*, 1943; H. St. J. Philby, *A Pilgrim in Arabia*, 1943.

**Islamabad**, tn. in Kashmir, India, on the R. Jhelum, the original cap. of Kashmir, but now of secondary importance. It possesses an old summer palace, a beautiful mosque, and a shrine. Close to it are the sulphur springs of Anant Nag, falling into a reservoir full of sacred fish. Chintz, cotton, and woollen goods are manufactured, and the famous Kashmir shawls. Pop. 10,000.

**Island** (Old Eng. *íeg*, *ísh*, and *land*), piece of land surrounded by water, but exclusive of continents (see **CONTINENT**). Greenland, less than one-fourth the size of Australia, is possibly an ice-bound archipelago. New Guinea, with an area of 303,000 sq. m., Borneo (284,000 sq. m.), Madagascar (227,000 sq. m.), and Sumatra (182,000 sq. m.) are the next largest Is.; Great Britain comes sixth on the list, with an area of 83,700 sq. m. Is. may be divided

into two classes, continental and oceanic. The former are the result of the submergence of a coastal range, or may have been formed by the sea cutting through the neck of a peninsula, or the eating back of an inlet until a piece of land is cut off. In all cases, except Madagascar, these Is. are connected with the mainland by a continental shelf, and their flora and fauna are similar to those of the adjacent continent; for example, the Is. of the W. coast of Scotland bear this relation to Great Britain, which itself bears the same relation to the continent of Europe. They may be classed according to their structure, if they be solitary, as Iceland; in chains, like Japan; or in archipelagoes, as in the Aegean. New Zealand, in structure is usually associated with areas of continental dimensions, and, for that reason, it is often regarded as an I. of the continental type. It is, indeed, a miniature continent and too isolated to be spoken of as adjacent to Australia or to any other continental mass. Oceanic Is. rise abruptly from great depths, and show no geological continuity with the mainland. They are due to various causes, and may be either 'volcanic,' due to the gradual rising above the waves of submerged mountain peaks, or to a violent volcanic upheaval of the ocean-bed; or 'coral Is.' due to the gradual agglomeration by the action of the water, or the active building of the corals themselves, or the skeletons of marine organisms (see **CORAL**). Numerous submarine Is. have been discovered which only require volcanic action or the deposition of sediment to rise above the surface of the ocean. See also **GEOGRAPHICAL DISTRIBUTION**.

**Islands**, Bay of, bay on the W. coast of Newfoundland, in the Gulf of St. Lawrence, forming an estuary at the mouth of the Humber R. It is famous for its beautiful scenery, and is within easy reach of good fishing and hunting.

**Island Scots**, body of Highlanders, descendants of Somerset,thane of Argyll and lord of the Isles, who settled in Ireland, establishing themselves in the mts. of Ulster, plundering the surrounding country. The earl of Sussex made an attempt to subdue these MacDonalds (MacDonnells), but failed. They were finally defeated by their former ally, Shane O'Neill, who took their leader, Sorley Boy MacDonnell, prisoner. The Eng. restored the MacDonnells, and Shane O'Neill was slain by one of the Highlanders in a brawl (1567).

**Islandshire**, part of Northumberland, England. It was at one time part of the co. of Durham; it includes the Farne Is. and some dists near Berwick-on-Tweed.

**Isias** do Barlovento, see **WINDWARD ISLANDS**.

**Isia** de Pinas, see **ISLE OF PINES**.

**Isias** de Sotavento, see **LERWARD ISLANDS**.

**Islay**, is. of the Inner Hebrides, Argyllshire, Scotland, 13 m. W. of Kintyre, separated from Jura by the sound of I. Area 150,100 ac., or 235 sq. m. The lochs of Gruinart and Iudal penetrate so deeply



that the portion is almost separated and known as the Rhunn ofIslay. The highest summit is Ben Bheigair (1609 ft.). Fishing is very good in the streams and lakes; dairy-farming and whisky distilling are the chief industries. The chief tn. is Bowmore. I. was once the chief seat of the 'Lords of the Isles,' but the Campbells finally gained the is. (1616). Pop. 6500.

**Islebius, Magister,** *see* AGRICOLA, JOHANN.

**Isle Adam, L',** tn. of the dept. of Seine et Oise, France. The sixteenth century church of St. Martin suffered considerable damage in the Second World War. Pop. 1200.

**Isle de Bourbon,** *see* RÉUNION.

**Isle de Richelieu,** *see* JAN MAYEN ISLAND.

**Isleham,** vil. of Cambridgeshire, England, 10 m. S.E. of Ely. Chippenham Fen, 3 m. S.E. of the railway station, is a natural reserve of Fenland of particular interest because of the insect, plant, and bird life which it contains.

**Isle Jourdain,** tn. in the dept. of Gers, France, on the Save, 18 m. W. of Toulouse. It has great horse and cattle fairs and considerable trade in wine, produce and wine. It is an old tn., and contains an anct. church with a tower dating from the tenth century. Pop. 1100.

**Isle of Dogs,** *see* DOGS.

**Isle of Ely,** name given to the N. portion of Cambridgeshire, on account of its having been at one time isolated by marshes, being included in the region of the Fens; it has been drained and is now fertile land. Famous as the scene of the final stand of Hereward the Wake. It returns one member to Parliament.

**Isle of France,** *see* MACRITICH.

**Isle of Man,** *see* MAN, ISLE OF.

**Isle of Pines,** (1) I. of S.W. Cuba, 80 m. off Batabano, with an area of 1180 sq. m.; it has some minerals and quarries; but the islanders are chiefly engaged in rearing cattle, and cultivating grape fruit and winter vegetables. Pop. 10,000. (2) Also an is. dependency of New Caledonia, 30 m. to the S.E. with an area of 58 sq. m. and a pop. of about 600.

**Isle of Thanet,** *see* THANET, ISLE OF.

**Isle of Wight,** *see* WIGHT, ISLE OF.

**Isles, Lord of the,** Scottish title claimed by the descendants of Somerled (d. 1161), thane of Argyll. Somerled was a descendant of Colla Uais of Ireland. He succeeded in driving the Norsemen from Argyll and the W. Isles, establishing himself as an independent prince; his lands included Kintyre and the Isle of Man. His descendants maintained themselves in the same manner. In 1111 the Donald of the Isles, who had become very powerful by his fleet and large army, claimed the earldom of Ross through his wife, including the Isle of Skye. The earl of Mar, with an army of Lowlanders, marched against him, and Donald was defeated with great loss at the battle of Harlaw in Aberdeen. The earldom then reverted to the crown (1121), but was restored by James I. to the heiress, mother of Alexander Macdonald, third lord of the Isles

and thus eleventh earl of Ross. John Macdonald, fourth lord, committed treason, and was deprived of his earldom (1469). In 1502 Donald Dhu, grand-son of John, was proclaimed king of the Isles, and led a revolt against James IV. He was defeated and fled to Ireland. Since 1469 the title of 'Lord of the Isles' has belonged to the Prince of Wales. The title 'Lady of the Isles' is sometimes applied to the wife of Baron Macdonald, descendant of a half-brother of John of the Isles. It is, however, a matter of keen controversy. The house of Somerled survives in two branches, that of Baron Macdonald of the Isles and the Macdonnells, earls of Antrim in Ireland.

**Isles of the Blessed, or Fortunate Isles,** mythical group of is., on the edge of the W. Ocean, peopled by the blessed mortals who were 'never to die.' Sev. nations seem to have believed in this myth. Tradition places the Amenet (pleasant place of the dead) of the early Egyptians somewhere in the W. Ocean; the Babylonians believed in an isle of the blessed encircled by four rivers. The Gk. belief expressed by Homer appears to connect them with the Elysian Fields. Plato describes in his *Timæus* how Solon was told by Egyptian priests of a country larger than Asia Minor, which was overwhelmed by the sea. This was known as 'Atlantis,' and the surviving is. were termed the Fortunate Isles. A very early tradition suggests than an unrecorded voyage to the Canary Isles and Madina may have gained these places this mythical name. The Celtic Avalon of King Arthur and St. Brendan's Is. were presented as blest with summer all the year round, and 'therefore fortunate.' There are also legends of Lyonesse off Cornwall and many others.

**Isle-sur-la-Sorgue L',** tn. in the Vancluse dept. of France, 12 m. E. of Avignon, picturesquely situated on the Sorgue, a trib. of the Rhone. The inhabs. are chiefly engaged in the textile industry. Pop. 6500.

**Isleworth, tn. and dist. in Middlesex, England.** Situated in the fertile valley of the Thames, it is full of flourishing mkt. gardens and nurseries. It also contains Swan House, a former seat of the duke of Northumberland. The only manuf. of importance is soap. Forms with Heston a bor. constituency, pop. 47,000.

**Islington, Sir John Poynder Dickson-Poynder, first Baron (1866-1936),** Eng. politician and administrator, son of Rear-Adm. J. B. D.-P. Succeeded his uncle, 1881, as sixth baronet of an old Wiltshire family of Hartham Park, Corsham. He sat as Unionist member for the Chippenham div. of Wiltshire, 1892-1910, but took an independent line as a strong free-trader. In 1910 he was appointed governor of New Zealand. Chairman of the Indian Public Service Commission, 1912-14. Chairman, National Savings Committee, 1920-26.

**Islington, metropolitan bor. of the co. of London, England.** It includes Holloway, Highbury, Kingsland, Barnsbury, and Canonbury, all retaining the names of anct. manors, the latter belonging as early as

the thirteenth century to the priory of St Bartholomew, Smithfield the name still given to the great metropolitan cattle market. The two prisons of Pentonville (1842) and Holloway (1850) are included in the dist. also the Agric Hall (1862). Other buildings are the Great Central Hospital, the N Polytechnic the London Fever Hospital and the London School of Divinity St John's Hall Highbury. The bor is divided into three parls divs each returning one member. Pop 220 100.

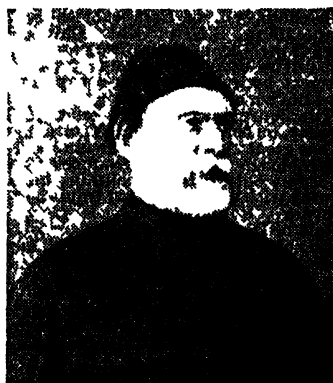
**Islip**, tn of U S A, Suffolk co New York on Long Island and Great South Bay a favourite summer resort. It is 11 m N of Brooklyn and the head quarter of sev sporting clubs. Hatching and fruit canning industries. Pop 3 400.

**Ismail**, or **Ismailia** (1) Tn and dist of Bessarabia in the Moldavian S S R on the N arm of the Danube 120 m S W of Odessa. The tn is the seat of an active export trade being especially noted for its fruit. It was at one time Turkish fortrez but was taken by the Russian general Suurov in 1790 and finally ceded to Russia in 1878. It became Rumanian in 1918 and Russian in 1940. Taken by the Gers in 1941 in the course of their invasion of Russia and retaken by the Russians in 1944. Pop (tn) 26 600 (dist) 221 200. (2) In of Egypt on the Suez Canal and connected by rail with Suez and Cairo. Has fine public squares and gardens. Pop 16,000.

**Ismailis** Mohammedan sect who belonged to the Shiites. They therefore believed that the imamate was vested in the descendants of Mohammed alone and so of Ali, the prophet's son in law and chosen minister. Their name was derived from Ismail ibn Ja'far, whom they deemed the seventh and last of the Imams. The sect would long ago have died out had not a certain Abdallah ibn Maimun arisen (c A D 870) a Persian sceptic and juggler who traded on the Ismailites' Messianic belief in a 'Hidden Imam' or 'Mahdi'. The converts of Abdallah learnt to despise all positive religious and outward observances, and to regard the doctrines of resurrection and hell etc. as mere myths or allegories. In 891 a Babylonian peasant named in Karmat allied himself with the Ismailis and founded the brotherhood of the karmathians who were the cause of ceaseless bloodshed and rebellions during the two centuries following. The Fatimite dynasty of Califs and Mahdis sprang from Obeidallah Grand Master of the Ismailites. This man was descended from Ali Allah and claimed to be a son from the stock of Ismail the prophet's daughter.

**Ismail Pasha** (1830-95) Khedive of Egypt will be chiefly remembered in history as the man who by his senseless expenditures opened an easy avenue to European intervention in Egyptian affairs. Yet he discovered in his backward people the worth of a good education and of many Western ideas. In 1863 he became viceroy, having successfully crushed a formidable revolt in the Sudan. In 1867 he persuaded the Turkish sultan to recognise

him as Khedive and four years later became virtually independent. During his reign he enriched many an unscrupulous financier for he built palaces and theatres founded a sugar industry, reorganised the customs etc. all with foreign credit. By 1874 the year of the annexation of Darfur he had piled up a national debt of over £100 000 000 and when he sold his Suez Canal shares to Great Britain (1875) he practically finished the work of his financial rescue. The final result of foreign interference was the abdication of I in 1879 in favour of his son Ismail. The remainder of his life was spent in exile. See Califes **Ismail** the Imperial Khedive 1933 G. Doubl *Il Re Sultano dell'Egitto* 1934



ISMAEL IASHA

**Ismay, Lionel Hastings**, first Baron (b 1884) Brit soldier commissioned in 1907. He served on the Indian frontier and in the First World War in Southland, where he was twice mentioned in despatches. He was at the Staff College Quetta, 1922, and at the Army Headquarters India in 1924. He was military secretary to Lord Wellington Victoria of India, 1931-33, and secretary to the Committee of Imperial Defence 1938. He was deputy secretary to the War Cabinet from 1939 and Chief of Staff to the Minister of Defence from 1940.

**Ismay, Thomas Henry** (1837-99), English owner of a Cumberland. He started a shipbuilding business of his own at Liverpool, after serving a short term of apprenticeship and engaged particularly in the Australian trade. In 1867 he entered into partnership with Wm Imrie, and formed the Oceania Steamship Company. Later he became chairman of the White Star Line, and a director of many other industrial enterprises.

**Ismene**, daughter of Oedipus and Jocasta. She wished to share the punishment of Antigone, her sister, for giving burial to Polyneus.

**Ismet Pasha**, see **İNÖNCÜ**.

**Ismid**, or **Isnikmid** (auct. Nicomedia), tn. in Asiatic Turkey, situated at the head of the gulf of the same name. It is connected by rail with Halidar Pasha, Angora, Konia, and Smyrna, and contains a fine sixteenth century mosque. It is the seat of a Gk. metropolitau, and an Armenian archbishop, and was formerly the auct. seat of the kings of Bithynia, but it now retains little of its former dignity. Its port, Dariche, is about 3½ m. distant, and here the Anatolian Railway Company have built docks and a quay. Pop. about 18,100.

**Isnik**, see **NİĞİKA**.

**Isobar**, line drawn on a chart joining places of equal atmospheric pressure. The chart may represent the earth's surface or a surface at a constant height above the earth.

**Isochronism**, that property possessed by an oscillating system, e.g. a pendulum, which oscillates in equal times, however great the vibrations may be. This can only be possessed when it moves in a cycloidal arc. Because of their practical l., musical instruments such as tuning forks, organ pipes, and stretched strings give notes whose pitch is independent of the intensity. *See* SOUND; ELASTICITY.

**Isoclinial Strata**, those which dip in the same direction on both sides of the axis of curvature. They were doubtless preceded by ordinary symmetrical folding, after which the vertical axis became tilted and gave a sigmoidal fold; in many cases continued strain has caused the middle limb to be elongated and fractured.

**Isoclinic**, and **Isogonic**. When a magnet is suspended freely from its centre of gravity, and allowed to come to rest, it is found that it takes up a definite position at a given locality. The vertical plane passing through the axis of the magnet is called the magnetic meridian. The angle, between the plane of the geographical meridian and the magnetic meridian is called the declination. This varies at different points on the earth's surface. **Isogonic** lines are lines connecting those places on the earth's surface at which the declination is the same. The angle made by the axis of the freely suspended magnet with the horizontal is called the inclination or dip. At the two magnetic poles the dip is 90°; at the magnetic equator its value is zero. It has intermediate values at places between the poles and the equator. **Isoclinic** lines are lines connecting those places on the earth's surface at which the inclination is the same.

**Isocrates** (436-338 B.C.), celebrated Attic orator, b. at Athens, where he was taught in the schools of Gorgias, Prodicus, and Socrates. He was prevented by his timidity from ever speaking in public, but wrote orations for others. He started a school of rhetoric at Chios, but subsequently moved to Athens, where he had 100 pupils. He was a personal friend of Philip of Macedonia, and this friendship for a time kept off war. When the Athenians were defeated at Cheronæa in 338, I. was so overcome with grief that he put an end to his life. Twenty-one of his orations and nine letters have come down to us. The

eds. of his extant writings are by Baizer and Sauppe, 1856; Benseler and Blass, 1878 and 1913-27; and Mathieu-Lémond, 1928 ff. *See* Sir R. C. Jebb, *Attic Orators*, 1893; G. Schmitz-Kahlmann, *Das Beispiel der Geschichte im politischen Denken des Isokrates*, 1939.

**Isocyanides**, **Isontitriles**, **Carbamines**, or **Carbylamines**, class of carbon compounds, isomeric with the cyanides, but containing the group -NC, in which the alkyl group is united to carbon through a nitrogen atom. They are extremely poisonous, have a disgusting odour, and on hydrolysis with a mineral acid yield formic acid and an amine. They cannot be hydrolysed by alkalis, and are of interest as possessing a bivalent carbon atom, the normal valency of carbon being 4. I. are made by heating a primary amine (e.g. aniline) with chloroform and alcoholic potash. *See* NITRILES.

**Isodimorphous Substances**. Two substances are said to be isodimorphous when they each crystallise in two distinct forms (i.e. are dimorphous) and in each of their dimorphous forms are isomorphous. For example, arsenic and antimony trioxides each crystallise in two distinct forms which occur naturally in minerals, but each form of the arsenic compound is isomorphous with the corresponding form of the antimony compound. Thus, As<sub>2</sub>O<sub>3</sub> in arsenolite (cubic), in claudelite (orthorhombic); Sb<sub>2</sub>O<sub>3</sub> in senarmontite (cubic), in valentinite (orthorhombic). A. and S. are isomorphous, so also are C. and V. Again, calcium carbonite is dimorphous, crystallising as calcite and aragonite. Lead carbonate (i. the mineral cerussite) is isomorphous with aragonite, but no form is known which is similar to calcite. Crystals of calcite often contain, however, carbonate of lead (plumbocalcite), which shows that this latter may also crystallise in the same form as calcite, although as yet it has not been discovered as a distinct mineral. Calcium and lead carbonates may therefore be said to be isodimorphous.

**Isoteles**, single genus contained in the order Isotelaceæ, which flourishes in temperate and tropical lands and consists of fifty aquatic or semi-aquatic plants. Sev. of the species are known as quillworts on account of their grass-like appearance, and *I. lacustris* is known in Britain as Merlin's grass. The genus resembles *Selaginella* in its characteristics.

**Isola**, tn. in the Free Ter. of Trieste, 9 m. S.W. of Trieste on the S.E. shore of the gulf. It is noted for the famous I. wine. Pop. about 10,000.

**Isola Bella** and **Isola Madre**, two celebrated is. of the Borromean Is., Lake Maggiore, N. Italy. I. M. is the larger and has long terraces and an old palace.

**Isola del Liri**, com. of Italy, prov. of Caserta, situated on an is. formed by the R. Liri, and 5 m. S.W. of Sora. It has machinery works and paper and woollen mills.

**Isolationism**, see UNITED STATES OF AMERICA, History.

**Isomerism**, term introduced by Berzelius to denote the phenomenon of the existence of two or more different substances whose molecules consist of the

same number of the same atoms. Thus there are two compounds, viz. ethyl alcohol and dimethyl ether, which both have molecules consisting of 2 carbon atoms, 6 hydrogen atoms and 1 oxygen atom. The existence of isomers is explained by the different ways in which the atoms are arranged in the molecules. Thus ethyl alcohol is  $\text{CH}_3 \cdot \text{CH}_2 \cdot \text{OH}$ , while dimethyl ether is  $\text{CH}_3 \cdot \text{O} \cdot \text{CH}_3$ . The first case observed was that of ammonium cyanate and urea (Wöhler, 1828), both of which have the formula  $\text{CON}_2\text{H}_4$ ; the former compound, however, is of the structure  $\text{NH}_4 \cdot \text{O} \cdot \text{C} \equiv \text{N}$ , while the structure of urea is  $\text{O} = \text{C}(\text{NH}_2)_2$ . **Stereoisomerism** is I. which cannot be explained on the usual plane formulae, but necessitates consideration of all three dimensions of the molecule. It is frequently accompanied by optical activity, i.e. stereoisomers often exert a rotatory effect upon the plane of polarisation of polarised light. **Dynamic isomerism** or **tautomerism** is the name given to the reversible chemical transformation of one isomer into another. Dynamic isomers usually exist as an equilibrium mixture of the two isomeric forms; thus ordinary ethyl acetoacetate is a mixture of a compound



with the isomeric substance



**Isomorphism** (Gk. *isos*, equal; *морфн*, form). Two substances are said to be truly isomorphous when their crystalline forms and chemical compositions are similar. Mitscherlich discovered that the phosphates and arsenates of sodium crystallise in the same form, and from this and other observations he formulated, in 1821, his 'law of I.' which states that substances of similar chemical composition exhibit the same crystalline form. Since, however, a large number of similarly constituted substances are now known which crystallise in distinct forms, the statement requires modification. Among truly isomorphous substances may be mentioned the following: the alums, zinc sulphate,  $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ ; and magnesium sulphate,  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ ; ammonium chloride,  $\text{NH}_4\text{Cl}$  (in which the group  $\text{NH}_4$  behaves as a metallic radicle); and potassium chloride,  $\text{KCl}$ , etc. The converse of Mitscherlich's law by no means holds. Thus we find the diamond, C; magnetite,  $\text{Fe}_3\text{O}_4$ ; and the alums, which exhibit no chemical analogy, crystallising in octahedra. These substances are not truly isomorphous, but are said to be isogonous. The power to form 'mixed crystals' or 'overgrowths' is generally accepted as a criterion of I. Thus, magnesium and zinc sulphates crystallise together in all proportions in the same form as a crystal of either constituent, and if a crystal of chrome alum be immersed in a solution of common alum, the new layer of the latter will be deposited regularly on the old crystal of the former. The law of I. is the most important generalisation in the science of crystallography, and has proved of much use in settling the atomic weights of sev. elements.

**Isonitriles**, *see* under **NITRILES**.

**Isonzo** It. riv. which has its source at Monte Terglou in the Julian Alps and drains into the gulf of Trieste in the Adriatic. It is about 75 m. in length, is deep and rapid, and waters a rich alluvial plain in Friuli, including all Gradisca and Gorizia. In its upper course it unites with the Natisone. Its tribs., more mt. torrents, are the Idria, Torre, and Vipacco. At the tn. of Gorizia it is about 110 ft. above sea-level. It was the scene of the defeat of the barbarian king Odoacer by Theodoric in A.D. 493. In the First World War, being in what was then Austrian ter., it was early the objective of the Its., whose armies reached it in 1915, their aim being mainly directed to the achievement of their traditional irredentist dreams. But this was all they were destined to accomplish for some time, for in 1916 the Austrians weakened the It. hold on the I. valley by a determined advance in the Trentino. The Its., however, aided by Brusilov's drive on the E. Front (*see* BRUSILOV, ALEXEI ALEXIEVICH; RUSSIAN FRONT (FIRST WORLD WAR)) launched a strong counter-offensive along the riv. and, on Aug. 4, the first day of the move against Gorizia, carried the heights on the W. bank overlooking the tn., storming the summit of Monte San Michele and, after sev. more days' fighting, capturing all the heights W. of the riv. together with Gorizia. They were now appreciably nearer their goal of emancipating Trieste; but thereafter Cadorna, under whom these successes had been won, suffered his historic defeat at Caporetto (*see* CADORNA; CAPORETTO). No further fighting of decisive importance took place on the I., the issue being decided on the Piave.

**Iso-poda**, name of an order of Malacostracan crustaceans, characterised by a broad, flattened body, with no carapace, and by lamellar legs, whose inner rami serve as branchia, situated on the abdomen. They have many features in common with the Amphipoda, as, for instance, the sessile eyes and the firm, calcareous covering of the body, but the abdomen of I. is usually much shortened and the heart is situated posteriorly. Some of the larger species inhabit the bed of the sea, others are inhabitants of fresh waters, and many are parasitic on the bodies of fishes and crustaceans. I. are divided into two sections; under I. Genuina are grouped Oniscoidea, woodlice, the only terrestrial forms, Asellota, Phreatoicoidea, Valsifera, Flabellifera, and Epicaridea.

**Isoprene** or **Methyl-butadiene** ( $\text{CH}_3 \cdot \text{C}(\text{Me}) \cdot \text{CH} \cdot \text{CH}_2$ ), liquid which boils at 36–37° C. It is a member of the olefine series of hydrocarbons, and can be obtained by the distribution of caoutchouc or synthetically from isoamyl alcohol (which is present in fusel oil). I. has attracted much attention because it may readily be converted into substances resembling rubber, but synthetic rubber as hitherto made is generally inferior to, and more expensive than, the natural product.

**Isopyre**, greyish or black mineral, consisting of silicates of lime, iron, and alumina. It has a vitreous lustre like obsidian.

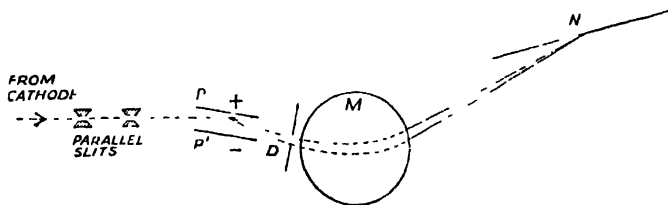
**Isoquinoline**, see **LEUCOL**.

**Isotelus**, name of a genus of trilobites found in the calcareous strata of the U.S.A.

**Isothermal Lines** (from *ἴσος*, equal, and *θερμός*, heat), also called **isotherm**, connect places on a map where the temp. on the earth's surface is the same at any given time at the sea-level. Isothermal charts afford a ready means of studying relative temperatures and may be drawn to indicate the average monthly, seasonal, or ann. temps. They show how temp. is affected by land and sea.

**Isotopes**. The word isotope was introduced by Soddy to embrace those instances where two or more individuals of different atomic weight occupied the same position in the Periodic Table. I. have identical atomic numbers (excess of protons over electrons in the nucleus—see **ATOM**), whilst the number and distribution of electrons outside each nucleus are the same. For practical purposes, their chemical and physical properties agree.

covery of I. of very general occurrence. The elementary gas to be examined is subjected to an electrical discharge (see **DISCHARGE TUBES**) under high vacuum, whereby some rays carrying positive charge result. These rays are allowed to pass through a slit in the cathode to an observation chamber beyond. The diaphragm *D* selects rays which have been deflected by the electrical field imposed by the oppositely charged plate *P'P'*, and they are then brought to a focus on the photographic plate *N* by the operation of a magnetic field introduced by the electro-magnet *M* (see Fig. below). A mass spectrum depending on mass alone is obtained at *N*. Each isotope gives a record of its presence, and its atomic mass can be found. Thus, chlorine contains two I. of atomic masses 35 and 37 mixed in such a ratio that the average atomic weight is 35.46. Tin has eleven I. The atomic masses of all I. examined are whole numbers (within one part in 1000) except



POSITIVE RAY SPECTROSCOPE

Though in the case of the isotopes of hydrogen, viz. hydrogen itself (atomic weight 1), deuterium (atomic weight 2), and tritium (atomic weight 3), the chemical and possibly physiological properties are noticeably different.

Ordinary lead (atomic weight 207.2; atomic number 82) is isotopic with radium G (atomic weight 206.05), a disintegration product of uranium; with radium D (atomic weight 210), a product of the disintegration of radium; and with thorium D (atomic weight 208). Richards obtained the value 206.08 for the atomic weight of lead associated with the mineral clevite, whilst Hönigschmid reported 207.9 for lead from thorite deposits. During radioactive changes (see **RADIO-ACTIVITY**) the effect of an element losing a  $\beta$  particle (an electron of negligible mass) is to shift it one place to the right in the Periodic Table, whilst the loss of an  $\alpha$  particle (identical with the helium nucleus of four protons and two electrons) shifts the element two places to the left. Thus if an element loses two  $\beta$  particles and one  $\alpha$  particle, a new element is formed occupying the same position in the Periodic Table (an isotope). Again, an atom of uranium (atomic weight 238) can lose eight  $\alpha$  particles and six  $\beta$  particles giving an element of atomic weight  $238 - 4 \times 8 = 206$ .

**The Positive Ray Spectroscopy** (Aston, 1919) has been invaluable for the dis-

covery of I. of very general occurrence. The elementary gas to be examined is subjected to an electrical discharge (see **DISCHARGE TUBES**) under high vacuum, whereby some rays carrying positive charge result. These rays are allowed to pass through a slit in the cathode to an observation chamber beyond. The diaphragm *D* selects rays which have been deflected by the electrical field imposed by the oppositely charged plate *P'P'*, and they are then brought to a focus on the photographic plate *N* by the operation of a magnetic field introduced by the electro-magnet *M* (see Fig. below). A mass spectrum depending on mass alone is obtained at *N*. Each isotope gives a record of its presence, and its atomic mass can be found. Thus, chlorine contains two I. of atomic masses 35 and 37 mixed in such a ratio that the average atomic weight is 35.46. Tin has eleven I. The atomic masses of all I. examined are whole numbers (within one part in 1000) except

**Separation of Isotopes**.—Chemical methods in general are unsuitable, but other methods such as distillation, evaporation, diffusion, effusion, and centrifugation have been more successful, in particular cases—e.g. uranium 238 and uranium 235—separation has been effected on a comparatively large scale.

Most elements have isotopic forms, and some (e.g. xenon, tin, and cadmium) have six.

**Isotropy** (*ἴσος*, like, *τροπή*, character), condition of having uniform characters throughout. The term is especially applied, in physics, in connection with substances or media in which elastic stresses are propagated uniformly in all directions. Such substances are termed **isotropic**, and the possession of the quality supposes that the molecular structure of the medium is homogeneous throughout its substance. Non-homogeneous media, on the other hand, are known as **anisotropic** or **heterotropic**. In crystallography, I. is a property possessed by certain crystals of the cubic system which have only one index of refraction for rays of the same wave-length. They have, therefore, no action on polarised light. I., in embryology, is applied by Pünger to that

condition where there are no predetermined axes

**Isoutriles, see** ISOCTYANDIA

**Isfahan**, or **Istahan**, tn and prov. of Iran (Persia). The prov. is bounded on the N by Kashan and Ilq, on the E by Yazd on the S by Fars and westward by the Bakhtiari dist and Aharistan. Its pop is over 500,000. Wheat, rice, cotton, opium, and tobacco are produced in plenty. The tn, once the cap of Persia, lies on the Zayandeh R., which is spanned by fine bridges connecting the city with its Armenian suburb Julia, the surrounding plain is covered with fertile gardens and orchards. The Chihil Sutun, or Hall of Forty Pillars, Hasht Behesht, the palace of Shah Abbas I and the Masjid-i Shah, or Royal Mosque are splendid remains of the days of its glory before the Afghans demolished it in 1722. Traders gather in crowds along the busy bazaar, but whole streets are now in utter desolation. Pop about 100,000.

**Ispirescu, Petre** (1830-87) Rumanian writer b at Bucharest the son of a barber. Acquired a printing estab and printed the records of the Rumanian Academy. In 1862, he began to write popular tales, and left as his literary legacy many books of folk tales and the reputation of being the best in his line in his native land.

**Israel** (God fights) name given to the patriarch Jacob on the occasion of the famous incident related in Gen. xxxii and the name also came to be given to the tribes of the Hebs. collectively and as a nation. In later days it will be seen the name was restricted to the N kingdom of I proper, while the S kingdom was known as Judah (see the following article). It is proposed in this article to deal with the hist. of the Hebs. from the time of the Patriarchs to the fall of the temple. (For their hist. since that date see Jews.) The accounts which the Hebs. themselves in later days gave of their origin are contained in the early books of the Bible, and these are largely based upon genuine tradition. But, as will be seen from the articles on the separate books, they underwent much editing in the course of years, always with a view to securing their greater conformity to a scheme and to increasing their didactic character. Moreover, they show a general tendency to imagine later conditions as present in primitive times. The ancestors of the Israelites were certain of the pastoral tribes having their abode in the wild tracts to the S and E of Palestine, of N Semitic (and probably of Aram.) stock. Their nearest kinsmen were Edom, Ammon, and Moab. About 2000 B.C. they migrated under their tribal chief, Abraham, from Haran in Mesopotamia into the land of Canaan. Here the tribes continued to lead a pastoral life and ultimately, in the time of Jacob, a famine in the land of Canaan led to a fresh migration into Egypt. In the Biblical narrative the whole twelve tribes are mentioned as taking part in this migration, but it is important to notice that the movement is

especially associated with the name of Joseph, that is to say, the ancestor of the chief of the N tribes which formed I proper. Here they obtained leave from Pharaoh to dwell in the land of Goshen, where their continued adherence to their own customs and pastoral life led them to be accounted barbarians by the cultured Egyptians. In Egypt they were subjected to repressive measures, induced by a fear lest they should ally themselves with Egypt's foes. Then there arose the figure of Moses, the great founder of both the religion and the law of I. Moses was the son in law of a priest of Midian, and at Horeb / Sinai, the mt. of God he heard the call of Yahweh (Jehovah), his father's God to deliver I from the bondage of Egypt. He had much difficulty in rousing the enthusiasm of those he was sent to save, but ultimately the work was accomplished by means of the miracle wrought by Yahweh on behalf of his people. Moses led the Israelites to Mount Sinai, and here a covenant was solemnly made with Yahweh and the new religion of I was inaugurated based upon a conception of the Deity more spiritual than any which had yet been conceived. From Sinai they passed to the work of conquering Canaan for which they had set out. An attempt made at Kadesh on the S frontier was unsuccessful and they returned to the wilderness for a time which according to the Biblical narrative made the whole period forty years. During this time Moses died and it was under Joshua that the entry into Palestine was finally made. Details of this are given in the Book of Joshua.

The Israelites now settled down to an agr. and commercial life entering in many cases into treaties of friendship with their Canaanite neighbours. This weakened the bonds of union between the various tribes and might well have led to the ultimate fusion of the races. This was prevented by the rise from time to time of the *shofetim*, or Judges, who roused the dynamism of the tribes. Fifteen such hebs. are named in the Book of Judges. After Joshua comes a long period of falling away marked by the occasional rise of a deliverer. Among the rest of the Judges the most famous are Deborah, the prophetess, and Barak, Gideon, Jephtah, Samson and the prophet Samuel. During this period I does not come at all into contact with the great kingdoms of the East, and their conflicts were rather with their own kinsmen, the Moabites, Ammonites and also the Philistines. The Philistines were among the most powerful opponents of I, and it was while suffering under defeat from this race that the Jews cited for a king, not only that by this centralisation of authority more highway might be made against the invaders, but also that they might be like all the other nations. Samuel the prophet, who was at that time their leader, reluctantly consented to accede to their desires and chose as their king Saul, the son of Kish.

*From the foundation of the Monarchy (c. 1020 B.C.) to the exile—Saul soon*

proved his fitness for the new position which had been given to him by brilliant successes first by the raising of the siege of Jabesh Gilead, after which he was solemnly proclaimed king at Hebron, and then by a decisive victory over the Philistines at Micmash. Here the victory was due chiefly to the bravery of Saul's son Jonathan and six hundred Benjamites, who accompanied Saul who was a member of their tribe. Saul was himself a great warrior, and his next campaign was against the Amalekites, who had long been troubling Judah. He was, however, given to fits of madness, and to quiet him in these, David, the son of Jesse the Bethlehemite, a cunning player on the harp, was brought in to play to him. His presence, however, had a bad effect on Saul, and this was increased by David's rapid rise in popularity. His courage and success in war had led Saul to make him his armour bearer, and his intimate friendship with Jonathan, the king's son, rendered his position such as to cause Saul's jealousy. Moreover, he was the king's son-in-law. Hence Saul decided to slay David, who in consequence became an outlaw, ultimately having his centre of operations at Ziklag. He resolutely refused to enter into operations with I and events were so shaping themselves that it was possible for him to return in power on Saul's death. This occurred at Mount Gilboa, and David, on hearing of it, immediately went up to Hebron with his followers, and was anointed king of Judah. Meanwhile Abner Saul's leading general, had taken Saul's son Ishbosheth to Mahanaim and there had him crowned as king of I. War in consequence broke out between I and Judah, in which the S. kingdom was steadily victorious. On the death of Abner and Ishbosheth, the crown of I was offered to David, who immediately took up the work of uniting the two dynasties. He transferred his cap to Jebus (Jerusalem), the great hill fortress of the Jebusites, whose position had hitherto constituted them a barrier between N. and S., and thence he brought the ark. But the Philistines, though they had acquiesced in David's sovereignty of Judah, could not acquiesce in this extension of his power, and war resulted. In a succession of violent conflicts David secured the freedom of his kingdom and pushed it boundaries in the N. to Dan, S. to Beersheba, and W. to the Philistian frontier. The I. boundary was continually changing. David's great work, however, was in the consolidation of the kingdom, and his internal administration. To him the idea of the national sanctuary at Jerusalem soon to become the Temple owed its inception. His high poetic and religious faculty is attested by his psalms and by those of the school named from him. The crown passed from David to his son, Solomon, whose name is associated by tradition with power, wisdom, and wealth.

Now for the first time, I took a prominent place among the great nations of the E., though it is probable that it was in some degree subject to Pharaoh, whose

daughter Solomon had espoused. Commercial treaties were entered into with such neighbouring monarchs as Hiram of Tyre, in union with whom ships were sent as far as Tarshish (Spain) and Ophir (S. Arabia?). Solomon now led the life of the ordinary F. despot. His court was more splendid than any other of which we read in the hist. of I., but such magnificence could be sustained only by a heavy taxation. Matters reached a crisis on the death of Solomon (930 B.C.). A denutation headed by Jeroboam, which came to Solomon's son Rehoboam, to ask relief from the burdens which his father had laid upon the country. There were two courses open to him: acquiescence in his people's demands, or an attempt to intimidate them. He chose the latter, and the immediate result was a revolt of the tribes of Israel under Jeroboam, the son of Nebat. Judah and Benjamin alone were left to Rehoboam, while I., for the name is henceforth reserved to the N. kingdom, made Jeroboam its king.

At this point it will be well to make a short digression, and to consider the main points in the religious condition of the Hebrs. The anc. Hebrs. had no conception of Yahweh (Jehovah, *q. v.*) as the God of the whole earth. He was regarded rather as the God of their own particular nation, though not as the only God who might be worshipped. This latter consideration explains the frequency of the falling away of the Jews from Jehovah, which would be inexplicable on the hypothesis that they recognised Him as the one God. But the Israelitish conception of the Deity advanced rapidly, and as a result their moral ideal was far higher than that of the surrounding nations. The advance continued during the period of the Judges, though as we have seen, relapses into foreign cults were frequent. In this period the functions of the prophets, such as Deborah, was to bring back the people to the conception of Yahweh as the God of their nation, to prevent in fact, the religion of Yahweh being entirely overcome by heathen cults. The institution of the monarchy heralded a great change. David brought his royal sanctuary at Jerusalem to pre-eminence, and the next reign saw the erection of the Temple. Its purpose was that here, at certain ann. festivals, the whole people might gather for a national feast. Though later tradition attributes to Moses as its customary the institution of a priestly succession in the line of Aaron, the institution of the hierarchy, in point of fact, post-exilic sacrifices were offered by the head of the nation, clan, or family, or by a prophet. When Jeroboam instituted a new kingdom, therefore, one of his first acts was to prevent the Israelites from going up to keep the ann. festival at the Temple. He did this by instituting or reviving sanctuaries at Bethel (and Dan?), where he set up golden calves as symbols of Yahweh, and instituted a new priesthood. His sin, it would seem, lay not in neglecting the service of the Temple, but in the retrograde step towards idolatry shown by the erection of the golden

calves. The great period of the prophets was the eighth century B.C., to which belong many of the greatest of the Messianic prophecies, such as those in Amos ix. 11, Hosea iii. 5, and those in the earlier half of Isaiah. The high spiritual feeling of the age is also well shown in the Book of Deuteronomy, from which Our Lord quoted the two commandments on which hang all the Law and the Prophets. The idea of Yahweh as the judge and ruler of the whole world was now generally accepted, and a still greater development is seen in the emphasis laid upon the moral responsibility of the individual by such a prophet as Jeremiah.

To return now to the political development. During the two centuries that elapsed between the death of Solomon and the conquest of I. by Shalmanezzer, king of Assyria, nineteen kings reigned in the kingdom. These nineteen kings may be regarded as covering four periods. The first period (930-890 B.C.) is occupied in attempts to establish a dynasty and in wars with Judah. It ended in civil strife, from which ultimately emerges the new dynasty of Omri, which gives us the second period from 890-843. Its kings, after Omri himself, were Ahab, Ahaziah, and Jehoram. The reverses which Omri suffered at the hands of the Syrians were made up for by Ahab. This king was a great statesman, though the injury his idolatry did to I. is well shown in the Biblical narrative. He formed an alliance with Jehoshaphat, king of Judah, the alliance being cemented by the marriage of Jehoshaphat's son, Jehoram, to Athaliah, daughter of Ahab. The two nations then took united action against the Syrians, with whom, after the defeat of Benhadad II., a treaty was formed. Ahab died in battle at Ramoth Gilead, and in the reign of Jehoram an attempt was made in union with Ahaziah, king of Judah, to retake this town. Now occurred the rebellion of Jehu ben Nimshi, in which Jehoram and Ahaziah both perished. Jehu founded his dynasty (which forms the third period, 843-740) in a sea of blood. Down to the time of Jehu, the sovereignty of Judah had remained in the possession of the house of David (six kings), but on the death of Ahaziah an attempt was made by Athaliah to exterminate this dynasty. Joash, however, escaped, and after six years was proclaimed king by Jehoiada, the chief priest. Athaliah was slain and the Davidic dynasty restored. A fresh attack now came from Hazael, king of Syria, who was bought off by Joash. There now succeeded for Judah a time of comparative prosperity and quiet. Matters changed with the accession of Tiglath-Pileser III. to the throne of Assyria in 745 B.C. At this time a general confederacy of Syrian states against Assyria was being promoted, but Ahaz, king of Judah, refused to join it. He rolled instead, in opposition to the prophet Isaiah, upon friendship with Assyria. Hence the Syrians and Israelites opened a campaign against him, in which they then were joined by the Edomites. Tiglath-Pileser entered N. Israel in support of Ahaz, and

deported into Assyria the leading inhab. of Galilee and the dist. around. He also extinguished the Syrian monarchy, and set up Hoshea as vassal king in I. For some years Hoshea remained submissive, but he was then persuaded to revolt by So, king of Egypt. Hence Shalmanezzer IV. marched against him, and for three years besieged him in Samaria. The city was eventually taken by Sargon (722 B.C.), and the chief inhabitants of I. to the number of 27,290 were taken into Mesopotamia and Media. They were replaced by Assyrian colonists, and these, intermixing with the inhab. of the country, formed the mixed race known as Samaritans. The kingdom of Judah had, after all, survived its more powerful neighbour. Here Ahaz was still king, but he was succeeded a few years later by his son, Hezekiah, who attempted a reform in the religion of the country, which had been much debased under the preceding kings. He inaugurated a campaign against local sanctuaries and strove to restrict worship to the Temple. In this he was assisted by Isaiah. Judah was still subject to Assyria, and Hezekiah's friendship with Egypt brought him into danger of punishment from Sennacherib. An Assyrian army was, indeed, approaching Jerusalem when it was arrested by a plague. Egypt was, moreover, prepared to support Hezekiah, and so Sennacherib retired. On the death of Hezekiah the succeeding princes encouraged the heathen cults in their worst forms, but another and greater reform came on the accession of Josiah (621 B.C.), connected especially with the finding of the book of the law (see DEUTERONOMY) by Hilkiah the priest. Meanwhile the Assyrian empire was breaking up, and Judah came into collision with Pharaoh Necho II., who was desirous of pushing the interests of Egypt. In conflict with him Josiah fell at Megiddo (608), while Jehoahaz, his younger son and heir to the throne, was carried into Egypt while Necho set Josiah's eldest son, Jehoiakim, on the throne of Judah. In 605 Egypt became subject to Babylon, and Judah became subject to Nebuchadnezzar II. before 600 B.C. In 598 an attempt to regain his independence was made by Jehoiakim, and Jerusalem was besieged. Jehoiakim, the boy-king who had succeeded his father, was taken prisoner, and in the following year (597), from which Ezekiel reckons the years of the captivity, the greatest and noblest of the Jews were deported to Babylon, while Zedekiah was appointed king over those that remained. In 586 a fresh revolt led to the sack of Jerusalem by Nebuchadnezzar and fresh deportations. There was still no peace, however, for Gedaliah, the Babylonian governor left in charge, was assassinated but the remnants of the Jews fled into Egypt, taking with them the prophet Jeremiah.

*From the Exile to the Revolt of the Maccabees.*—The exile was a distinctly providential step in the development of the Jewish religion. Now, indeed, the true idea of the Messiah first clearly appears in such writers as Deutero-Isaiah, generally allotted to this period. The synagogue



was now instituted and the general conception of the after-life was developed under Persian influences (see HELL). But although those Jews whose minds were fixed chiefly on commerce found themselves better off in Babylon than in their own country, the idea of absence from the Temple was intolerable to the religious. Hence it was not long before attempts were made to secure a return to Jerusalem. Nothing more is known of the hist. of the return from exile until the reign of Artaxerxes Longimanus (162-125), when a band of some six thousand exiles, under the leadership of Ezra the scribe, arrived in Jerusalem. In 116 the city of Jerusalem was re-fortified, and the Temple worship re-instituted. To this period belongs the final split between the Jews and the Samaritans, made by the establishment by the latter of a rival sanctuary on Mt. Gerizim. Palestine was affected by Alexander the Great's march through the E., and, on the defeat of the Persians at Issus in 333, it became subject to Gr. rulers. A large number of Jews were deported to form part of the pop. of Alexandria. On the subdivision of the kingdom on Alexander's death, Palestine fell to the lot of the Ptolemies, for whom still larger numbers of Jews passed into N. Africa. The lot of Palestine was, on the whole, fortunate until the reign of Ptolemy Philopater, when the Jews were much oppressed. After the defeat of the Egyptians, Antiochus III. incorporated Palestine with the dominions of the Seleucidie (197). A deliberate attempt was made under the next sovereign, Antiochus Epiphanes, to stamp out the Jewish religion. Its peculiar rites, such as circumcision and the observances of the Sabbath, were strictly forbidden, while the Temple was dedicated to Zeus, and sacrifices offered there. Thousands suffered death rather than give way to such coercion, but ultimately a deliverer arose, who inaugurated one of the greatest and most heroic periods in Jewish hist.

*From the Maccabees to the Destruction of the Temple.*—Hitherto the resistance of the Jews had been mainly passive. Active resistance came from the family of Mattathias, an aged priest of the vil. of Modein. He slew a Jew who was offering sacrifice to heathen deities, and slew also the Syrian officer who was supervising. Then, taking with him his five sons, he fled eastward, and gathered round him in the wilderness a great company who would with him take aggressive measures, fighting if need be, even upon the Sabbath itself. The act was a desperate one, and a measure of success was rendered possible only by the internecine struggle for the throne which distracted the Syrians themselves. Mattathias, who was an old man when he commenced the revolt, soon died, handing on the leadership to his son Judas, surnamed *Maccabeus*, 'the hammerer,' from which his whole family has received the name of 'the Maccabees.' Judas was a great warrior and a fervent believer in his cause. He defeated Apollonius, a prominent Syrian general, and finally, Lysias, the viceroy himself, at Beth-zur. Being now master of the country around the cap.

Judas decided to make Jerusalem the centre of his operations, and hence the Temple was fortified and re-dedicated. After being besieged in the Temple by the Syrians, in 162 B.C., permission was granted them to exercise their religion freely. But the Maccabees resolved to continue the struggle for political freedom. The secular struggle was to be less successful than the religious. It began well, with the defeat and death of Nicanor near Beth-horon, but this was almost immediately followed by an overwhelming victory for the Syrians at Elasa, in which Judas himself was slain. The leadership of the party, which was now scattered far and wide, fell to Jonathan, the brother of Judas who was able by skilful diplomacy to secure peace on favourable terms, ultimately being himself made high-priest in 153. In 143 Jonathan was slain in the quarrels for the throne of the Seleucidie, and Simon, his brother, became leader of the Maccabean party. He fortunately espoused the cause of Demetrius II., from whom he secured a recognition of Palestine's independence (142). So famous a year was this that it was considered the beginning of a new Jewish era, and from it dates were counted and coins were dated. Simon, who was made high-priest in 141, was a wise and prudent ruler, and under him the country enjoyed comparative quiet, and in the one important conflict, that with Antiochus Sidetes, Simon was victorious. But there was still much scheming and party strife. Ptolemy, Simon's son-in-law, was striving to secure the supremacy and as a step to this Simon was assassinated. But the crime gained Ptolemy nothing, for the power fell into the hands of Simon's ambitious third son, John Hyrcanus, who assumed the high-priesthood in 131 B.C., and with it the sovereignty. The reign of John Hyrcanus was outwardly most prosperous, though at the beginning he was hard pressed by Antiochus. Later in his reign (131-104) he extended the Jewish dominions considerably in all directions. The Samaritans were reduced and the 'Temple' on Mt. Gerizim was destroyed. He further subdued the Galileans and Idumeans. During his reign, however, there is visible the rise into political prominence of the Pharisees and Sadducees. John was led to throw in his lot with the latter of these on account of that opposition of the Pharisees to his family which was to continue throughout the period of the Hasmonean dynasty. On his death, his son, Aristobulus I., succeeded to the throne by the murder of his brother, and reigned but one year, during which he reduced the Itureans. He was followed by Alexander Jannaeus, a warrior prince who almost entirely neglected his sacerdotal position, his chief aim being the extension of his ters. He met his death (76 B.C.) in a campaign against the Arabians.

After him, the high priesthood fell to Hyrcanus, Alexander's oldest son, but all power remained in the hands of his mother Alexandra, who accorded a much greater share in public affairs to the Pharisees. But Hyrcanus's younger brother, the

energetic Aristobulus II., angry at his exclusion from a share in the gov., raised an army and deposed Hyrcanus. Then, as the supporter of Hyrcanus, there arose Antipater the Idumean. This man induced Hyrcanus to place himself under the protection of Arcas, king of the Nabataeans, by whose aid Aristobulus was defeated. The Romans now took a hand in the struggle, and Pompey, in 65 B.C., sent his legate, Scourus, to settle matters, which he did in favour of Aristobulus. This decision was reversed two years later by Pompey himself. Hyrcanus was made high-priest, but the gov. of Judaea was attached to the Roman prov. of Syria. In 57 an attempt was made to set Alexander, the eldest son of Aristobulus, on the throne. Alexander was taken prisoner by Gabinius, governor of Syria, and in order to break up what unity remained among the Jews the land was divided into five administrative dists. Aristobulus, who had been taken by Pompey to Rome, now escaped and raised a second ineffectual revolt in 56, and this was followed in 55 by a last attempt under Alexander, which was put down by Gabinius. On the death of Pompey, however, Hyrcanus made his submission to Caesar. Antipater the Idumean then secured for himself the post of procurator of Judaea (17 B.C.), while to Hyrcanus was left only the high-priesthood. Thus ended the Hasmonean dynasty. Antipater also succeeded in making his eldest son, Phasael, governor of Jerusalem, and his other son, Herod, governor of Galilee. But the patriotic Jews viewed with horror this estab. of an Idumean dynasty, and set up Aristobulus's last remaining son, Antigonus, as his rival. Antipater was poisoned and Phasael committed suicide in prison, but Herod invoked the aid of the Romans, and in 37 secured Jerusalem. Antigonus was put to death in the same year. Herod carried on the difficult task of ruling Judaea by the aid of the Romans, and with the utmost cruelty. On his death the kingdom was divided into tetrarchies, ruled respectively by his sons Antipas, Philip, and Archelaus, the last-named ruling Judaea and Samaria. His rule, however, was so cruel and despotic that in the year A.D. 6 Augustus deprived him of his power and sent him into exile. His tetrarchy was then attached to the province of Syria. Henceforward, except for the brief period from A.D. 11 to 13, Judaea was under Roman procurators. During these few years it was ruled by Herod Agrippa, whose favour with Claudius secured to him all the territories over which his grandfather had ruled. On his death there was a period of dreadful anarchy and internecine strife between the inhabs. of Palestine, which was increased rather than lessened by the actions of the procurators, many of whom were in league with the worst elements of the pop. From the chaos there rose a fanatical party known as Zealots or Sicarii (Assassins). These rose in revolt in the year 70, and a bloody struggle ensued, terminated only by that bloodiest of all scenes, the destruction of Jerusalem by Titus (A.D. 70). See also HEBREWS.

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**Israel**, a secular Zionist State in Palestine, the precise boundaries of which remain to be settled. (For the hist. of the anc. Heb. nation, see preceding article.) The state is the ultimate development of the institution, after the First World War, of a national home for the Jews in Palestine through the mandate granted by the Allied and Associated Powers to Great Britain. The General Assembly of the United Nations in Nov. 1947 approved the partition of Palestine into Jewish and Arab independent states by a majority vote, and a United Nations Commission was entrusted with the duty of partitioning the country (see further under PALESTINE). The state of I. came into existence on May 16, 1948, on the day following the termination of the Brit. mandate, in confirmation of the proclamation by the Jewish National Council at Tel Aviv of a new Jewish state with the Council as its provisional gov. President Truman's recognition of the state followed soon afterwards, and before long his lead was followed by more than thirty other members of the United Nations. On May 11 the State of I. was admitted as the fifty-ninth member of the United Nations by a plenary session of the General Assembly which by 37 votes to 12, with nine abstentions, endorsed the favourable recommendations of the Security Council.

The United Nations' partition scheme divided Palestine into no fewer than eight segments; but the achievement of the precise application of this scheme was still baffling the power of the United Nations in 1949. Meanwhile by force of arms the Jews had infiltrated everywhere excepting the Jerusalem-Tulkarm-Jenin triangle and the areas held by them included all Galilee and, in the S., almost all the Negeb. They had also secured Haifa as a reinforcement base; Jaffa had become a Jewish tn.; so also Nazareth and Beersheba; while the E. Negeb was occupied by Jewish forces down to the gulf of Akaba. Moreover, though the United Nations' scheme of partition (which I. had accepted) included the new Jewish Jerusalem in a special International Zone, Dr. Chaim Weizmann, the first Israeli president, declared that it was inconceivable that the city should be placed under 'foreign' rule. Furthermore Jewish

propaganda was already envisaging Jewish settlement eastwards into Trans-Jordan. The net result to the Arabs of the Jewish military successes was that the number of their refugees reached the appalling total of 600,000 including the pop. of Jaffa, Acre, and Nazareth, who fled in panic after details became public of the massacre by Irgun Zwi Leumi and the Stern Gang of the inhab. of Deir Yasin, an Arab vil. near Jerusalem, and the number was further augmented by the forcible eviction of the Arab inhab. of Arab vills. by victorious Jewish troops in order to make room for Zionist immigrants.

Within the Jewish-held areas of Palestine the Israeli gov. put into force the plans which the Jewish Agency had worked out in readiness for the termination of the Brit. mandate and by early 1949 the Tel Aviv Gov. had an organised administration. Jewish courts were functioning; there were Jewish depts. for war, finance, foreign affairs, posts, telegraphs and telephones, railways, public works, education, police, immigration, and antiquities; there were two wireless stations—Kol Israel and Kol Hierushalayim (the Voice of Israel and Jerusalem); the full H. press appeared, as well as the Eng. *Palestine Post* in Jerusalem and an Arabic daily newspaper *El Yom* (the Day) was printed and ed. by Jews in Jaffa. The State of I. took over three para-military unofficial organisations: el Haganah, a large well-equipped force; the Irgun Zwi Leumi, a smaller body organised on commando lines; and the Stern Gang, a gangster formation specially trained for murder (it was finally proscribed by the Israeli authorities). In addition, since the mandate ended a large number of men specially trained in Hungary and elsewhere in E. Europe were brought to Palestine and absorbed into the Jewish army. The total Jewish fighting strength was unknown but was estimated at 100,000 men and women. They were much better equipped and armed than the Arabs and much of their material came from Czechoslovakia. It may be noted here the difficult questions of nationality may arise in W. countries which have accepted the Balfour Declaration (q.v.) and have recognised or will recognise the State of Israel. But no Middle E. country ever accepted the Balfour Declaration and none had recognised the Israeli State before late in 1949. Hence the status of the Jewish communities in the various Arab countries remains to be settled. In Iraq there are 73,000 Jews; in Egypt, 63,000; in Syria, 30,000; and in Libya 30,000. Now that there is Israeli nationality, these Middle E. Jews have become foreigners; the decision whether they will be naturalised or asked to leave rests with the Arab Govs.

I. is a pioneer country, but differs from other pioneer countries in the fact that the cap. required for the absorption of the new immigrants into its economic life has been supplied not from foreign loans, but from the immigrants' own assets and from the donations of world Jewry. Thus I. has hardly any foreign indebtedness and

has a credit balance of cap. The rate of economic progress in I. will doubtless continue to be determined by immigration and cap. importation, and everything seems to indicate that after the return to normal political conditions Jewish private cap. will be invested in I. on a large scale. Jewish industry in I. was a creation of the immigration from Central Europe which began about 1933 and made great advances during the Second World War. Thus the diamond industry began during the war and great quantities of cut stones were exported to the United States. The chief articles of industrial export, besides polished diamonds, are Dead Sea chemicals, petroleum products, artificial teeth, and soap. The export industry of citrus concentrates is steadily growing. Olives, mostly cultivated in the hill areas, form the next most important crop. Vegetables are grown extensively, and also grapes and figs. Of great importance to the development of Jewish industry are the labours of the Weizmann Research Institute carried on under the direction of Dr. Chaim Weizmann and Dr. David Bergmann. Much development has been achieved by the Jews in Palestine. The modern vills. in the desert, the drained marshes and reclaimed dunes, the schools, hospitals, factories, and social services are all evidence of their practical activities. The Jews in Palestine have remained untouched by the native mode of life; they have not learnt from the Arabs how to build houses that are cool, spacious, and cheap—this conservatism being the result of the immigrants having come from the Diaspora, from the ghettos and suburbs and displaced persons' (q.v.) camps of the world and having brought with them scraps of alien civilisation picked up in transit. Life in I.'s cap. has an amorphous quality that gives the impression of being the huge Jewish suburb of a non-existent city.

The Socialist parties in I., with their materialist and anti-clerical doctrine, occupy all political and economic key positions. Yet life in I. is (1949) nevertheless under the sway of clericalism as in no other country of the world—a paradox in view of the fact that the orthodox religious element represents only about 13 per cent of the pop. I. has a univ. on Mount Scopus in Jerusalem, but no medical faculty there mainly because dissecting bodies is against Mosiac law. The dominant political party is the Labour party (*Mapai*), which commands about one-third of the total votes and can rule only by coalition—either with the United Workers' party on the extreme Left or with the Revisionists and other Right wing groups, and it is said that if it wishes to rule independently of the extreme Right and Left it must make concessions to the clergy. The paradox here in present day I. is that of a Socialist country under clerical sway, which may be explained by the gap in its hist. and the fact that its heroes are still the Prophets and its only classic the Bible. But while this state of things may last for some years the young native generation,

which is already playing a dominant part in the Israeli army, has no memory of ghettos, is developing a native folklore and national tradition of its own, and may well carry out a bloodless secular div. between Church and State.

A common language of the immigrants of recent decades was a practical necessity, and the choice of Heb. followed naturally. The movement to revive Heb. began in

a continuation of W. thought, art, and values, or on a vincer of Levantinism.

The Knesset, the name for the Israeli constituent and legislative assembly, met for the first time on March 8, 1949, in its permanent home in Tel Aviv. Immigration and development figured largely in the gov.'s programme, it being proposed to launch at once a four-year development and absorption plan to double the pop. in



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#### ISRAEL: YOUNG JEWS MARCH TO WORK ON A NEW SETTLEMENT

The Hebrew inscription on the makeshift ceremonial arch reads (translated): 'Be this village a nest of securities (safety) to us, to our sons (children), and to all the refugees of (the people of) Israel'

Palestine in the 1880's; by the end of the First World War it became, with Arabic and Eng., the official language of the country. Biblical Heb. is the language of the gov. and parliament, of schools and courts, of press and radio. But it is not a dead language, and was not so even before Zionism (though that movement gave it a new vitality) having been a *lingua franca* for Jewish scholars all over the world. Its future in I. is assured. (See also *HEBREW: The rebirth of the Hebrew tongue through Zionism.*) At present the whole educational system is based on developing out of its anct. roots a specifically Heb. culture rather than on

that period by mass immigration. But concern for I.'s economic condition came upon the heels of this optimistic proposal. Through unlimited immigration that condition was rapidly becoming more dangerous than were the advancing Arab armies in the previous year and this concern at length crystallised into the sombre realisation that I. could not depend indefinitely on the generosity of world Jewry or foreign loans, and that only by her own efforts would I. survive as a sovereign State. In the year ending about April 25, 1949, more than 210,000 Jews entered the country and over 100,000 of these arrived in the four months of 1949. Although

more than 150,000 had been housed 53,000 were then (April 26) still in reception camps and suffering from great overcrowding, while thousands of immigrants who had houses were without work. In these circumstances the gov. announced plans for an austerity plan based on the Brit. model, including a rationing system with a dietetic standard, control of imports and home production, fixing of maximum prices for essential articles and heavy surcharges on unessential goods and restriction of luxuries to export needs.

It was realised that a vital factor in the development of I. was the Negeb, the desert wilderness in S. Palestine reaching to the Sinai and the Suez Canal. The basis of the 1919 four-year plan was the irrigation of this area to provide home-steads for the flood of immigrants. Political considerations complicate the situation, apart from the possibility of oil-discoveries. Its proximity to the Suez Canal must make the area a matter of concern for Britain, and in some quarters communal settlements are confused with communism, and regarded as a danger in view of the condition of the Arab States. Large-scale development, moreover, requires the water of the Jordan, and this in its turn depends upon a firm understanding between I. and Transjordan.

It is clear that I. will continue to regard itself as a member of the W. nations. The attitude of Britain, and the activities of the Arab Legion, in a large measure destroyed the pro-British feeling which was once latent, but the U.S.A. has undertaken the rôle of protector. Dollars from America formed (in 1919) a vital part of I.'s economy, this causing a move to the right in internal politics.

The behaviour of the I. Gov. towards its Arab minority of about 120,000 has been characterised by moderation and a desire to weld them into the community. Freedom of the press and religion was established, and Arab workers grouped into trade unions affiliated to the central Trade Union Council (Histadruth). Education and the vote were secured for women: Arabic as well as Hebrew is compulsory in State schools.

The estimated Jewish pop. of Palestine at the end of 1916 was 608,000. Jews formed the whole pop. of Tel Aviv (183,200) also of Petah-Tiqva (18,000) and Rehovot (10,200), and there were 71,000 Jews in Haifa and 31,000 in Jaffa.

See Musa Alami, *The Lesson of Palestine* (Beirut) 1919.

**Israelis, Josef** (1821-1911), Dutch painter, was of Jewish parentage. For two years he worked in Paris under Picot, and soon afterwards he settled down at The Hague, where he made his home for life. It was during a convalescence passed in the fishing-in. of Zandvoort that the poignancy of the poor's suffering and the tragedy of life were first vividly revealed to him; henceforth his pictures 'were painted with gloom and suffering,' and became the most sensitive and artistic expression of his well of intense compassion for the distressed and weary of mankind. I. has truly been called the Dutch Millet,

although he emphasised the shadow rather than the light. Among his masterpieces are: 'The Zandvoort Fisherman,' 'Village Poor,' 'Shipwrecked,' 'Cradle,' 'When We grow Old,' 'The Widower,' 'The Bric-à-brac Seller,' and 'Between the Fields and the Seashore.' I. is one of the first of modern painters. Pub.: *Spain, a painter's account of a journey in that country*, trans. by Alexander Teixeira de Mattos.

**Israfil, or Israfeel**, angel of music, who, according to the Mohammedan belief, will sound the last trump from the Temple rock at Jerusalem, calling men to judgment.

**Issik-kul, or Issikul** (*Kirghiz*, warm water) (1) lake in Russian Central Asia, in the I. Region of the Kirghiz S.S.R., is 5000 ft. above sea-level, and covers an area of 2300 sq. m. It is fed by many streams, but the surface is becoming smaller. The water is salt, and contains a large quantity of fish. On the S. shore stands the tn. of Przhewalsk (Karakul).

**Issoire, tn.** in France, in the dept. of Puy-de-Dôme, near the confluence of the Conze and Allier. It was captured by the Protestants and destroyed by the Catholics during the religious wars of 1574-77. It has manufs. of cotton goods and machinery. There is an interesting Romanesque Church of St. Paul. Pop. 6100.

**Issoudun, tn.** in the dept. of Indre, France, on the Théols, 17 m. N.E. of Chateauroux, is the cap. of an arron. It has copper foundries, manufs. of parchment, cloths, and agric. implements, and quarries of lithographic stone. Pop. 12,600.

**Issue:** (1) In law, off-spring or lineal descendants of any degree. In Eng. law the term is peculiarly appropriate to the descent (see INHERITANCE) or grant (*q.v.*) of real property, whether by deed or will. Before the Wills Act, 1837, a devise (*i.e.* grant by will) 'to A and his heirs, but if A die without issue, then to B and his heirs,' was construed to mean that A's estate (*q.v.*) should descend to A's issue in tail (see ENTAIL), *i.e.* as long as I. remained, when the gift went over to B and his heirs. But the Wills Act expressly enacts that the word 'die without issue' should be construed to mean die without I. living at the death (*i.e.* of A in the above example) and not an indefinite failure of I. The Settled Land Act, 1882, made a further change, the effect of which is that as to testators dying after 1882, any child of A who has attained twenty-one is free to retain or sell the land at his pleasure.

(2) In the language of pleading means some definite proposition of law or fact asserted by one party and denied or contested and avoided (see CONFESSION AND AVOIDANCE) by the other; conclusively settling forth the points on which both parties desire the verdict of a jury or the judgment of a court. To 'join issue' means in effect to deny or traverse a proposition in the other party's pleading, upon which joinder no further pleading is necessary. Where the parties are agreed as to the questions of fact to be decided between

them, they may, before judgment by mutual consent, obtain an order from a master to go to trial upon such questions without formal pleadings, the question being stated in what is technically termed an issue. The meaning of *I* in Scots pleadings is not dissimilar.

**Issus** (modern *Aïssa*), in Cilicia, near where that proud adorns Syria. Here Alexander the Great inflicted a crushing defeat on a huge host (500,000) of Persians under Darius their king. Vast treasure and the royal family fell into the conqueror's hands.

**Issy**, in the dept. of the Seine. France, 3 m. S.W. of Paris, forms part of the S.W. defences of Paris. It contains a school, Saint Sulpice, formerly the residence of Margaret of Valois. It manufactures silk and waxcloth and has distilleries and chemical works. Pop. 20,087.

**Istakhr**, ancient city of Persia, which was an extension of Persepolis, destroyed by Alexander the Great in 330 B.C.

**Istanbul** (formerly Constantinople), ancient *Κωνσταντινούπολις*, the city of (Constantine), until Oct. 13, 1923 cap. of Turkey, when it was superseded by Ankara (Ankara). The city stands on a hilly promontory of triangular shape having the Sea of Marmora and the Bosphorus on the S and E, and on the N the Golden Horn, an arm of the Bosphorus. It is thus surrounded by water on all sides but the W, where a strong wall shuts the city off from the mainland. Like Rome, *I* is a city built on seven hills, six of them being separated portions of one long ridge. As in the case of all great cities, *I* has spread far beyond its original bounds, and may be said to include two originally quite separate from itself. The name *I* is generally reserved for the part built on the promontory above described, and the suburbs are considered separately. These are: to the N. of the Golden Horn, Galata and Pera with *Lepliane*, to the E. of the Bosphorus in *Via Scutari* and *Hadikof*. Galata, of which the chief ornament is a lighthouse, is a great shipping mercantile, and banking centre, and was not united to *I* until 1153. Pera is the European residential quarter. *Lepliane* is of was important for the union founded from which it derives its name. *Scutari* (770) is an important commercial and industrial centre. The city of *I* is excellently situated, more advantageously perhaps than any European city but Naples. From the outside its appearance is most picturesque and imposing. At the taking of *I* most of the churches were destroyed and mosques were erected in the most prominent situation. Cupolas and minarets, with graceful curves and soaring spires combine with lofty cypresses to give the city an air of unique grace and to invest it with the mysterious glamour of the oriental world. Within, however, the appearance is not so pleasing. The streets form a labyrinth of dirty crooked and ill paved alleys, while most of the houses are low and are built of wood or rough stone. During the last seventy years the aspect of things has become much more European. The streets, under

W influence, have been widened and improved lighting at night is common, and a European style of building has been introduced. Cabs and electric trains are to be seen in most parts, while the old camel service has entirely disappeared. The dress of the people has changed in the same direction. The streets are generally dull in appearance, almost all animation being concentrated in the bazaars.

Almost all the important architectural and antiquarian monuments of *I* are to be found in the city proper. First and foremost among these comes the church of St. Sophia (*Αγία Σοφία*, Holy Wisdom),



W. I. Mansell

# ST SOPHIA, ISTANBUL

erected by Constantine, and rebuilt with additional magnificence by Theodosius (412) and Justinian (538-68). Though necessary repairs have been executed, it is the church of Justinian that we now have. The exterior appearance of the church is disappointing, but inside it is the most magnificent creation of Byzantine art. The architects were Anthemius (471) and Isidorus of Miletus. The great oval dome is 260 ft. long by 107 ft. wide, the central square being bounded by four large piers (each 2½ ft. square). These are surmounted by semi-circular arches, and support a dome 107 ft. in diameter. E. and W. are other great semi-circular spaces each crowned with a dome. The ornament is extravagant in its beauty. Moulds of various hues are arranged to form intricate patterns and mosaics appear here and there uniting the marbles. After the capture of the city by the Turks, St. Sophia was turned into a mosque, and its Christian ornaments removed or covered up. Some twenty churches shared the same fate. Of these that of St. Sergius and Bacchus may be named as an interesting early Byzantine monument. From St. Sophia many other mosques were imitated, and it may be said to inaugurate a fresh type of architecture for those buildings. The greatest of the imitations

is the mosque of Solymian the Magnificent, of which the effect has been said to be more imposing than that of the original. Of the two hundred or more mosques scattered throughout the city those of Achmet, Hajazet, and Mohammed II. may be mentioned. An important monument of the anct. city is furnished by the remains of the Hippodrome, the centre of the Rom. life of the tn. Here are to be found the obelisk of Thothmes III., brought from On in the reign of Theodosius, and the triple serpents column, once in the Temple of Delphi and brought to I. by Constantine. In 1153 the conquering Sultan threw his mace at the three talisman serpents in the Hippodrome, which were supposed to protect I. against serpents, and broke the lower jaw of one, but refrained from doing further damage when he learned that the city would probably be devastated by an invasion of serpents if its protectors were destroyed. The pub. reports upon the excavations in and near the Hippodrome are making Byzantine I. more real to us. The chief Mohammedan antiquity is the Old Seraglio, occupying the whole S.E. corner of the city. It originally formed the private domain of the sultan, and from the name of its chief entrance, Babi Humayun, the 'Sublime Porte,' has come the official name by which the Turkish gov. used to be recognised. It has three spacious courts, and around them are arranged the anct. buildings, one the church of St. Irene, and one the old treasury, still containing vestments and arms of tremendous value. The question of education has received much attention during the last half century, and much progress has been made, though the teaching establs. are very largely of foreign institution and management. Amer. and Fr. colleges led the way in modern education, though one of the large Gk. schools dates from the Middle Ages. Both Gks. and Armenians now have excellent educational facilities. The Turkish Gov. has also made great improvements, and in 1867 a school for higher education was instituted by Sultan Abdul-Hamid. This work was carried further in 1909, when a univ., granting degrees in theology, arts, science, etc., was also opened. The univ. of I. was completely reorganised in 1933. From the beginning there have been schools connected with the mosques, where elementary subjects and theology were taught. It is in the bazars that the oriental spirit is strongest. These are arranged in rows, well-furnished with most kinds of wares, but without any particular architectural features. The city is well fortified, the main line of fortification having been constructed since the Russian war in 1878. It is now easily accessible by rail, and there is good communication with the rest of the continent. It is connected with the central European railway system *via* Belgrade and Sofia. Exports are chiefly cereals, carpets, silk, wool, hides, and all kinds of refuse and waste material, such as horns, hoofs, skins, bones, old iron, etc. Sev. hundreds of tons of the sweetmeat known as 'Turkish delight'

are also sent yearly to the rest of Europe and America. The manu. of I. have all taken their rise during comparatively recent times, and only that of cloth-making has made any headway. During the years 1899 and 1900, handsome new quays were built on both sides of the Golden Horn, thus making an excellent harbour. Ships of the largest class find safe anchorage here, and there are fine graving and dry-docks. It was the centre of the Mohammedan faith throughout the world, being the seat of the Caliph until the office was abolished on March 2, 1924. The climate of the city is generally healthy, but it is very damp, and liable to great and sudden changes of temp. The city was originally very unhealthy through inefficient sanitation, but this is now improved somewhat. There are electric trams in I. and its suburbs, and in Izmir. The pop. is varied, presenting a most remarkable mixture of races, nationalities, faiths, languages, and costumes. Each div. forms to some extent a separate community, and the city divides itself into quarters according to these. On Nov. 1, 1922, the office of Sultan of Turkey was abolished, and on Nov. 4 the administration of I. passed into the hands of the Nationalist Gov. at Angora. On Nov. 17 the Sultan left I. 470 years after the first conquering Sultan had entered it. On Oct. 29, 1923, Kemal Pasha was elected first President of the Turkish Republic. I. had endured numerous air attacks during the First World War, and had been occupied by Great Britain, France, and Italy for five years; it was evacuated by them on Oct. 1923. A little later it was crowded by 30,000 destitute Turkish and 65,000 Russian refugees. According to the census of 1927, the pop. was 673,029, of which Stamboul contained 261,504, Pera 286,970 and Scutari 124,555. Pop. (1945) 845,000. I. is governed by a prefect assisted by a nominated council of twenty-four. It has now ceased to be the commercial centre of the Near East and the citadel of Islam and the capital of E. Christianity. I. has often been devastated by fire from the year 100 onward. In 176 the public library, which is said to have contained 120,000 vols., was destroyed. In 1696, 10,000 houses were burnt in consequence of the illuminations for the birth of the Sultan's son. In 1911 sev. thousand houses were burnt, and many more in 1912, 1916, 1917, 1919, 1921, and 1922. But now there is a fire-fighting organisation. In 330 I. was erected by Constantine the Great on the site of the anct. Byzantium, which dated from the seventh century B.C. For seven centuries it remained as the cap. of the Rom. Empire in the E. As 'New Rome' it was early important, and on the partition of the empire in 395, it became the seat of the E. emperors. Even before this time the new city had had to withstand assault, for in A.D. 378, after the defeat of Valens, the Goths had attacked it. Henceforth it was to do so on many occasions. Twice, in 616 and 620, it sustained onslaughts from the Persians, and twice again, in 668-75 and 717,

the Arabs furiously but unsuccessfully attacked it. In 1203, and again in 1204, it was taken by the Crusaders whose conduct on that occasion is one of their chief disgraces. From 1396-1401 it was unsuccessfully besieged by the Turks under Sultan Bajazet. Sult. in Murad II attacked it once again in 1422 and it held out with the greatest difficulty. The end was near, and in 1453 after a long and heroic defence against great odds, the city of Constantinople fell. See BARKAN WAT and TURKEY. See G. J. Grelot *A Late Voyage to Constantinople* (trans. by Philips, 1653), C. du I Du Cange, *Constantinople des Christiana* (new ed 1825) and *His. de Constantinople sous les empereurs français*, 1826. W. I. Brodrick and W. Besant *Constantinople* 1879. J. Pears, *The Fall of Constantinople* 1881, *The Destruction of the Greek Empire* 1903, and *Forty Years* 1916. W. R. Lethaby and H. Swinson *Church of Saint Sophia* 1894. R. A. Crossman *Constantinople* 1894. R. P. B. Davcy, *The Sultan and his Subjects* 1897. W. H. Hutton *Constantinople* 1900. W. Miller *The Ottoman Empire and its Successors*, 1927. Sir H. Luke, *In a Tarn* (hequerboard, 1934) and *The Making of Modern Turkey* 1936. C. Stewart, *Constantinople* 1948.

#### Istankeu, s (COS)

Isthmian Games, were held at Corinth and were called after the Isthmus. They were originally a festival commemorating Melicert who after being hauled into the sea was hanged into a deity. Their celebration dates back to 1326 B.C. but for some years they lapsed and when Theseus re-instituted them he did so in honour of Poseidon. Later they were held every five years and became sacred that they were not omitted even when Mummius had razed the proud city to the ground (146 B.C.). Huge crowds gathered from the islands and Asia Minor as well as Greece proper to witness contests of every description, and the most coveted prize was a pine leaf garland or a parsley wreath.

Isthmus (Gk *isthmus*, neck) term used in geography to describe a narrow neck of land joining two larger parts otherwise separated by water. Thus the I. of Suez links together Asia and Africa at the head of the Red Sea, that of Panama connects N. and S. America, and that of Corinth the Peloponnese with N. Greece.

Istap, town in which was formerly European Turkey now included in Serbia. Yugo-slavs on the Balkans. The inhabitants chiefly Serbians, number about 20,000, and are engaged in agriculture.

Istres, town in the dept of Bouches-du-Rhône France on the W. shore of Étang de Berre 19.25 m. N.W. of Marseille. It has important salt and soda works. Pop. 7000.

#### Istria, Dora d', see GRIKIA, HIRINA

Istria, comprises a peninsula in the N.E. corner of the Adriatic Sea between the gulf of Trieste and the gulf of Venice, and the is. of Krk (Veglia), Cherso (Lussino) and others. Total area of 1904 sq. m. The coast is very rocky and broken by many bays. Two thirds of the pop. are Slavs, and the rest Itals. The chief industries are

fishing, salt retrieving, and shipbuilding. Olive oil and wine are manufactured, fruits are cultivated, wheat, maize, etc. and oats grown, and cattle bred in large numbers. The local diet meets at Pore (Istria) (12,355) but larger towns are



Yugoslavia

#### CHRIS OF ISTRIA

Publ. (1) and Castagno (Konstanz) (1511) and (2) (1511) Indian author and so called. At the time of the dominion of Austria in 1511, between the two World Wars was part of Italy and since 1914 has been part of Yugoslavia. Pop. 403,000.

Iswari, Ishwar) Chandra (Vidyasagar) (1811-1861) Indian author and so called. At the time of the dominion of Austria in 1511, between the two World Wars was part of Italy and since 1914 has been part of Yugoslavia. Pop. 403,000.

Isyllus, Gk poet who occurs in an inscription in the temple of Asclepius in Epidaurus. Probably lived at the time of the Gk invasion of Sparta after Chalcidians.

Itacolumite, town in Brazil at the mouth of the Mucuna a tributary of the Amazon has a thriving exporting trade in the products of the district: corn, spices, dried fish, and india rubber, etc.

Itacolumite, or Flexible Sandstone, vel low sandstone of a porous nature found in Brazil. In the form of thin slabs, it is slightly flexible, a bar of it when supported at its ends, sags visibly but returns to the straight when laid flat. This is supposed to be due to the sand grains



which form the rock not being firmly cemented together. In England, beds of flexible sandstone are found associated with the magnesian limestone of Durham. Brazilian I. occasionally contains crystals of diamond.

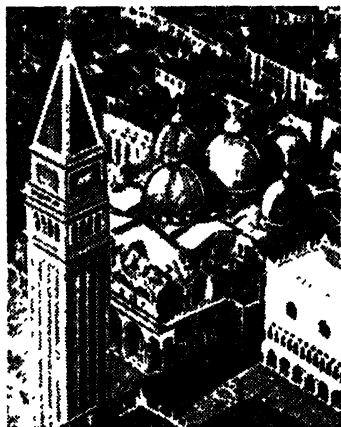
**Itagaki, Taisuke, Count (1837-1919),** Jap. statesman, was prominent in the progressive movement which led to the overthrow of a feudalism long since antiquated. At Tosa he opened a school (the 'Rishisha') where he taught his advanced and enlightened political views. The party of patriots, 'Aikoku Kō-tō,' acknowledged him as their leader, and he directed the policy of the 'Jigūto,' whose watchwords were 'liberty' and 'reform,' 1881-1900.

**Itajahy, riv. in Brazil,** flows through Santa Catherina, and enters the Atlantic Ocean at Itajahy, a small port for the Ger. colony of Blumenau.

**Italian Art,** in the dawn of Christian art in the fourth century a common style was sought in architecture, sculpture and painting, so as to give a common expression to the new religious ideas. The hist. of the development of Gothic architecture in Italy establishes very clearly the gradual transition from Roman ideas to Romanesque and Byzantine and ultimately to Gothic. Earlier Gothic architecture in Italy never achieved the striking effects it achieved in other European countries, owing to the constant influence of classical traditions and, in lesser degree, to the influence of Gk., Arab, and Moorish work. The earliest buildings used for Christian worship in Italy were not more adapted for such worship than for pagan rites. The form of architecture used was the Rom. art of the times, and to a large extent Rom. buildings, and particularly basilicas, were converted from the time of Constantine into Christian churches and anc. monuments were despoiled to provide the material for the Christian basilicas, mausoleums, and baptisteries, and even for the Arch of Constantine. The church of San Vitale, Ravenna, affords clear evidence of the way in which the constructional arrangements of pagan Rome were copied and utilised by the Christians. At the end of the sixth century and during the seventh, decoration in Rome assumes the Byzantine style even in colouring, e.g. in the basilica of the Apostles or in the mosaic of S. Vitale, Ravenna. In the Carolingian period of the ninth century the conflict between indigenous and foreign influences is interrupted by an attempt to return to the classical antique; but it is impossible to estimate the cultural movement of the Carolingian epoch towards the antique because no example of the sculpture of the period is extant. But revived Byzantine art continued to spread westward and Byzantine ivory carving and sacred icons and goldsmiths' work supplied models for all Europe from the tenth to the twelfth centuries,—a wealth of splendour which is extant in St. Mark's at Venice.

In what is called the second golden age, from the ninth to the eleventh centuries, Italy was enriched with Byzantine struc-

tures. Some of the best still contribute to the beauty of Venice and Sicily. The Gk. orient had its influence on painting up to the close of the thirteenth century, though not on architecture or sculpture; for since the eleventh century a new art had appeared, known as Romanesque, though some think it should more appropriately be called It. for one of its strongest characteristics was a harking back to old classical Rom. memories in the decora-



THE FIVE DOMES OF ST. MARK'S, VENICE

tion of cathedrals. Modern art, says Adolfo Venturi, had its beginnings in the Romanesque cathedral with its subordination of most elements to light effects, its doorways adorned with rare magnificence. Romanesque art in sculpture may be exemplified in the statuary of Autelami at Parma and Milan. In Tuscany, a whole line of architects in marble seem to have inherited a classical conception of design and to have maintained its integrity throughout the century, e.g. in the Baptistery at Florence and the cathedral of Pistoia. In the early thirteenth century Gothic designs were beginning to appear in Italy. This is shown in the construction in 1216 of the classic porch of San Lorenzo and in 1210 that of Civita Castellana. Yet at the same time the Cosmati still adhered to the horizontal in preference to the vertical and to the rounded arch, and it is from the Cosmati that the Umbrian architects trace their artistic descent. Cosmatesque art matures in the thirteenth century and finds a master in Tuscany. Arnolfo di Cambio, who exalts the It. tradition and influences the art of Giotto and through him all It. painting (Venturi).

Until the great revival of plastic art took place in the mid-thirteenth century, the sculpture of Italy was decidedly inferior to that of more N. countries and much of it was actually the work of N.

sculptors. Unlike the sculpture of the Pisani and later artists, the early figures are purely secondary to the architecture they are intended to decorate and they are the work of men who were primarily architects. But after the end of the thirteenth century the reverse was more often the case—as is exemplified by the sculptured decorations at the W. end of Orvieto cathedral. During the thirteenth century Rome and the central parts of Italy produced very few sculptors of ability, almost the only notable men being the Cosmati already mentioned. But during the fourteenth century Florence and neighbouring cities were the chief centres of It. sculpture and in the succeeding century Florence had become the æsthetic cap. of the world, having attained a pitch of artistic wealth and perfection rivalled only by that of anc. Athens, and indeed there is some similarity between Florentine plastic art of this period and that of fourth or fifth century Athens.

Niccolo d'Apulia's statuary is reminiscent of the mighty constructions of anc. Etruria and Rome and marks a break-away from Romanesque art. It heralds the reform in sculpture continued by Giovanni Pisano, in whose hands the representation of the human figure attains a completeness which It. painting could not acquire till a century later. In Niccolo's baptistery at Pisa sculpture is subordinated to architectural framework, but in the pulpit at Siena, made by him in collaboration with Giovanni Pisano, the sculptural effect is richer and more varied. In the fountain at Perugia, the finest flower of Giovanni's brilliant imagination, the influence of Niccolo has all but vanished and 'grave tranquillity has yielded to excited rhythm' and these qualities are to be found in the followers of Giovanni Pisano—Giotto, Andrea Pisano, Orcagna, who was famed as a goldsmith and painter as well as a sculptor, and Nino Pisano—sculptors of the thirteenth and fourteenth centuries. Another of the most inspired creations of Giovanni Pisano is the 'Massacre of the Innocents' in one of the reliefs of the Baptistery of Pisa. Well has it been said that this 'impassioned contemporary of Dante never created a greater or more dramatic work of art than these convulsed groups of mothers and children.' Andrea Pisano, originally an obscure goldsmith, became famous for his bronze bas-reliefs in the Florentine Baptistery. In it he shows a mastery of the representation of movement and a regard for the unity and inter-relationship of the varied scenes of a story which introduce a fundamental reform in composition in which he was forestalled only by Giotto in his paintings. The later half of the *trecento* also exhibits a nascent tendency towards reality, a tendency exemplified amongst the Veronese sculptors and particularly in the Venetians, Jacobello and Pier Paolo delle Masogno.

Great names in painting in the *trecento* are those of Pietro Cavallino, Giotto, and Cimabue, the last-named, as Dante records, being the first famous name in

Florentine art. Cavallini was the herald of the *stil nuovo* in It. painting and it was he who inspired Giotto. He was a master of the 'Roman School' and the greatest exponent of the classical style at the end of the thirteenth century. Some of his finest work is to be seen in the mosaics of Santa Maria in Trastevere, Rome, notably in the panel of the 'Birth of the Virgin' and in his frescoes in the convent of Santa Cecilia, Rome. Giotto, who with Duccio di Buoninsegna was a pioneer in liberating the arts from the rigid medieval tradition, reveals the profound tranquillity, the dignity of the spirit of this first renaissance of poetry and painting. His figures, far from imitating the silhouettes of contemporary sculpture, recall the massive simplicity of primitive monuments and their simplicity is enhanced by a corresponding simplicity of scenic background. His greatest paintings were destroyed, but in the Scrovegni chapel his frescoes reveal his power of capturing life, his sense of human character, and his keen dramatic instinct. Cimabue the Florentine continues the Romanesque tradition as may be seen in his work in the Uffizi gallery, Florence, and the frescoes at Assisi. Other names of the fourteenth century are those of Simone Martini, an artist with a rare sense of beauty of line, of colour, of graceful movement, and of human expression, Lippo Memmi and Ambrogio and Pietro Lorenzetti of the 'Sienese School,' a 'sort of æsthetic Lotus-land of painters.'

*Quattrocento* or fifteenth century It. architecture is glorified by the genius of Brunelleschi, the inventor of architectural perspective. The exteriors of his buildings preserve medieval castle features but the internal decoration is inspired by classical art. The church of Santa Croce in Florence and the cathedral there exhibit his work at its best. His follower Leon Battista Alberti, nevertheless gives the exterior a significance of style of its own. In Brunelleschi's art there is a light Florentine elegance in the airy arcades and friezes of cherubim; in that of Alberti is shown a predilection for the massive, a love of the romantic. Of the *quattrocento* was Francesco di Giorgio Martini who built the palace of Gubbio. The Lombard Gothic style of architecture of the fifteenth century is illustrated by the 'Ca' d'oro' Palace at Venice and the Doge's Palace. The Arco Foscari in the latter is the work of the sculptor Antonio Rizzo. Amadeo, in Milan, renounced the Gothic style, yet carried its flowery decoration into the Renaissance, as is shown in the facade of the Colleoni chapel at Bergamo. The lofty spirit pervading the work of the Urbino artist, Donato Bramante, is exemplified in the church of San Satiro, Milan and in the Trivulzio chapel, San Nazaro, in the same city.

The Gothic style characterises the work of many It. artists at the beginning of the fifteenth century. Among them may be mentioned Gentile da Fabriano whose most celebrated work is the 'Adoration of the Magi' in the Uffizi gallery. He was not a great artist, but he inherited much of the Siena School's feeling for beauty of

person, of line, and of colour, enhanced by a lively fancy which filled his compositions with jewels and flowers, rich brocades and gentle laughing faces so representative of the court art of his time. Antonio Pisano (Pisanello) is, however, the greatest painter of this artistic movement, but he displays a child-like pleasure in the minute presentation of natural objects. Other painters of this century were Fra Angelico, Masaccio, Paolo Uccello, Andrea del Castagno, Piero della Francesca, Melozzo da Forlì, Luca Signorelli, Antonio Pollaiuolo, Andrea Verrocchio, Filippo Lippi, Domenico Ghirlandajo, Giovanni di Paolo, Pinturicchio, Perugino, Botticelli, Mantegna, Cosimo Tura—a pioneer of the Ferrarese School—C. Crivelli, Francesco del Cossa—also of the Ferrarese School—Borgognone, Bramantino, Ercole de' Roberti, Antonello da Messina, Cima da Conegliano, Giovanni Bellini, Gentile Bellini, and Carpaccio. These are the masters of those great artists who were to invest the succeeding century with the full splendour of its art: thus Leonardo da Vinci derives descent from Verrocchio who perfected the art of shading figures and endowing them with spiritual refinement; Raphael derives from Perugino and Piero della Francesca; Michelangelo from Botticelli and Signorelli, both, especially the latter, remarkable for energy and vigour in their treatment of the human figure and their reaction from impassiveness; Correggio (Allegri) from Mantegna, the founder of humanistic painting in N. Italy, and Costa; (Gorgione) and Titian from Giovanni Bellini, whose faces are imbued with the clear light of innate goodness and calm. Fra Angelico's supreme quality is that of colour, and no other painter of the time employed tones of such purity. He has been described as 'the chief prophet in Italy of the beauty of holiness.' His designs are always exquisite and sometimes, as in the Florentine frescoes, 'The Transfiguration,' and 'The Marys at the Sepulchre,' they attain extraordinary grandeur. Masaccio, who died prematurely, assimilated scientific principles with the same natural ease with which he mastered the general construction and appearance of the human figure. In his fresco 'The Tribute Money' there is a mt. range which, in Ruskin's judgment, was the first piece of real mt. drawing in ant. art. Uccello was a great craftsman but he combined science with art to such an extent that it seemed to Vasari the art was overbalanced. Grandeur characterises the few surviving works of Andrea del Castagno as may be seen in the small 'Crucifixion' in the Brit. National Gallery. Of the Florentines of the fifteenth century Fra Filippo Lippi is noted for his gift of colour in the grand manner. Portraiture assumes a more prominent place with Ghirlandajo, a pupil of Baldovinetti, Perugino, like Pinturicchio, has an eye for undulating airy distances which seem to add an importance to his figures which they might not otherwise possess as is exemplified by his 'Virgin with S. Bernard.' Piero della Francesca, a Florentine by choice, is the link between the

old and new generations. His sense of spacious design was unrivalled by his contemporaries and make him a greater pioneer of landscape than Perugino. As a portrait painter he has no contemporary superior. In 'Baptism' and 'Nativity' the National Gallery has two of his best panel paintings. Signorelli was one of the most original masters of his time, whose energy found its outlet in the robust treatment of the nude, which he handled with a solid power only surpassed by Michelangelo himself. Antonio Pollaiuolo made a close study of artistic anatomy, as may be seen in the 'Martyrdom of S. Sebastian' in London. His 'Apollo and Daphne,' also in the National Gallery, proves him an admirable artist. Verrocchio's name survives chiefly as a sculptor, though he was also a musician and goldsmith as well as painter, but we are never certain how far paintings ascribed to him are wholly his work and not sometimes the work of his great pupil Leonardo da Vinci. Botticelli, the great artist of linear design is world famous for the languorous poetic beauty of his feminine types, but beneath this beauty lies a vigorous artistic energy. In all his best work he uses line with a sense of rhythmical quality which makes it seem a 'living thing' (Holmes). Leonardo da Vinci also had this quality but is inclined to confuse it with scientific considerations, whereas Botticelli uses rhythm for the sheer delight of creating them. His celebrated allegories 'Primavera' and 'The Birth of Venus' exhibit these qualities in their highest degree. Mantegna seeks the glamour of ant. Rome in statues and relief and most of his paintings have been described 'as a kind of coloured sculpture in the flat.' Typical examples are 'Triumph of Scipio' and 'Samson and Delilah' in the National Gallery. Material splendours are apparent in the work of Carlo Crivelli, many of whose paintings are in the National Gallery. Giovanni Bellini shows a wonderful and tender sympathy between man and nature, allied, however, to great artistic power. Within the range of his devotional studies he shows so remarkable a variety of design, sense of form, and gifts as a colourist that his example dominated Venice for a quarter of a century (Holmes) and his translucent colour effects are the peculiar glory of the Venetian school. In Carpaccio of the same school the Venetian delight in pageantry found its most complete expression.

Pisa's dominance in sculpture ended with the fourteenth century and as we have seen passed to Florence. The moment of transition from Gothic to Renaissance art can be studied in the work of Lorenzo Ghiberti, who vanquished Brunelleschi in the competition in 1402 for the decoration of the second door of the Florentine Baptistery. Jacopo della Quercia of Siena, a near contemporary of Ghiberti, is a bolder innovator in his love for strong relief and vigour of subject. The last traces of the Gothic tradition of sculpture are abolished by Donatello who for half a century imposes his own art on

Italy as a national art. His equestrian statue of the *Cattacchita* at Padua is one of the noblest in the world and only rivalled by the statue of *Colonna* at Venice by Verrocchio and Leopardi. In his relief he creates almost impressionistic effects of Bacchic movement. He has no rival in representing the ebb and flow of a crowd. Other sculptors of this century include Luca della Robbia, a maker of statuettes in Lucany. Desiderio da Settignano with a faculty for carving graceful aristocratic figures. Francesco di Giorgio Martini who was architect, painter and sculptor and three Florentine artists, Bernardo Antonio del Pollaiuolo and Andrea Verrocchio (already mentioned as painters) who almost outdo Donatello in attacking the problem of vital movement, the passion of the Florentine Renaissance.

In the sixteenth century, Rome became the artistic cap of Italy. Painters, sculptors and architects flocked there, and on their departure spread the new gospel throughout Italy and a national artistic style developed in the name of Rome. Architects as students of Roman classicism endowed their buildings with an imposing monumental aspect and a rhythm of regular proportions. The leader of this school of artistic thought was Donato Bramante, the architect of the Belvedere at Rome and of the staircase of the Vatican, but the unity of the monumental and the harmonious is the work of Michelangelo and of Giuliano and Antonio Sangallo. Great examples of Michelangelo's work in architecture are to be seen in the Sagrestia Nuova of San Lorenzo at Florence and in the magnificent dome of St. Peter's in Rome. Other architects of this period are Jacopo Tatti (Sansovino), Andrea Palladio of Venice and Vignola, the architect of the Palazzo Iarnese. In sixteenth century sculpture Michelangelo dominates the field. He raised the sculpture of the modern world to its zenith of glory, yet at the same time he sowed the seeds of a rapidly approaching decline for his imitators—such as Baccio Bandinelli, Giacomo della Porta, Ammanati and others copied and exaggerated his faults without the saving grace of a scintilla of his genius. The *Lapiths and Centaurs* and two figures of *Slaves* in the Louvre may be mentioned as examples of Michelangelo's power of dynamic expression through the nude human figure. Subtlety and refinement inform his splendid *Little group of figures* in St. Peter's. As a sculptor Benvenuto Cellini strives after size, but with him as with Sansovino and Alessandro Vittoria the art of Michelangelo is reduced to a sobriety that yet is not devoid of grace. The tomb of Giovanni Galeazzo Visconti, completed 1560, is a sumptuous example of the style of the Renaissance grown flabby from excess of richness and through abandonment of the simple purity of fifteenth century art. The sixteenth century indeed was one of transition to the state of degradation, yet it produced many sculptors of high ability, such as Giovanni da Bologna,

whose bronze statue of 'Mercury' in the *Uffizi* is a triumph of movement, while another of his works is the great fountain at Bologna.

In Northern Italy in the fourteenth to sixteenth centuries terra cotta was adapted to the most elaborate architectural purposes. Thus the W. facade of the cathedral at Monza, the cathedral of Crema, and S. Maria della Grazie in Milan are striking examples of the splendid effect obtainable by terra cotta work. But the most important application of terra cotta in medieval Italy was to statuary—reliefs, busts and groups of life-sized figures of the fifteenth and sixteenth centuries. Some of the Florentine terra cotta sculpture of the fifteenth century is the most beautiful plastic work known in any medium, particularly that by Jacopo della Quercia and Donatello. The portrait busts in terra cotta are perfect models of Ionic sculpture. Groups in realistic style in the sixteenth century were produced by Caradosso (Ambrogio Loppa) for S. Vitore at Milan and by Guido Mazzoni for churches in Modena.



LEONARDO'S 'GIOCONDA'

The sixteenth century in Italian painting was rendered glorious by a constellation of supreme artists whose names are headed by those of Leonardo da Vinci, Michelangelo, and Raphael, and include Titian, Giorgione, Allegri (Correggio), Veronese (Carrari), Sebastiano del Piombo, Jacopo Tintoretto, Gambattista Moroni and Caravaggio. It is true enough to say of Leonardo that 'his influence was so extraordinary that it is difficult to treat of any painter of his time

without mentioning his name.' His interpretation of chiaroscuro and his solution of the problems of form and movement proclaim the scientific visionary looking into the heart of nature. Yet the dominion of sixteenth century art properly belongs to Michelangelo, the artist of the prologue of the hist. of man in the Sistine Chapel, rather than to Leonardo. The masterly power of his art can be comprehended only by long study, the study of all that the progressive Florentine artists had been striving to achieve since the time of Masaccio but was attained only by Michelangelo. Like the great Gk. artists before him he seized on the nude as the best medium for revealing the highest aesthetic perfection; but, while Titian and Correggio sought this perfection in the sensuous, Michelangelo sought it triumphantly in physical force. Power and intellect are the qualities that mark his art, a profound knowledge of nature and careful study of the living model, yet no servile copying even of nature, for he often violates rules of proportion and, in other ways, rejects the lessons of science if that is necessary for the expression of his idea. For he was, perhaps, the greatest of idealists; his figures 'live by virtue of the life he infused into them and remain the grandest creations of Italian art' (Bryan). Raphael embodies the highest aspirations and finest culture of the Renaissance. He made a study of the frescoes of Masaccio and the reliefs of Donatello and of Michelangelo's sculpture and the work of Mantegna, and, next to Michelangelo, he was the most representative artist of his age. His frescoes in the Vatican are remarkable for a solemn grandeur of composition, wonderful portraiture, and great depth and richness of colour. Harmonious rhythm is, for Raphael, beauty itself as it is for Alberti. His tranquil art reflects the cultivated urbane society in which he moved and he had his triumphs, triumphs so real that even Michelangelo felt uneasiness at his growing fame and, it is said, availed himself of the powers of Sebastiano 'del Piombo' as a colourist for his own designs for a Pietà group at Viterbo in order to outlive him. Titian, who was a pupil of Giorgione, reaches the heights of sensuous beauty and as a colourist is unrivalled; but spiritual beauty is often wanting; he was a realist and, as Ruskin says, no ascetic. He tried like the Gk. artists to express the *joie de vivre* of human kind, and no painter was ever more brilliantly successful in the effort. His women's portraits have a rare charm and as a portrait painter he is admitted to be of the front rank. One of his most famous portraits is 'Homme au Gant' (in the Louvre). In this craft he undoubtedly influenced Velasquez. Classical myths and romantic idylls were the stuff of Giorgione's genius. Famous among the last named are 'Sacred and Profane Love' in the Borgese Gallery, 'The Three Ages of Man' in the Bridgewater Gallery, and 'Noli me Tangere' in London. He delights in pictorial visions without any concrete subject. Landscape, with Giorgione, be-

comes the main subject of the picture and figures belong to the landscape, not the landscape to the figures (Bryan). In his later works he approaches nearer the classical (Gk. than does any other master of the Renaissance, while yet revealing a note of yearning that was alien to the Gk. conception. His celebrated Bacchanal 'Bacchus and Ariadne,' in the National Gallery, is one of the supreme masterpieces of all time. Callari (Veronese), as may be seen from his famous 'Marriage at Cana' in the Louvre, delights in the gorgeous in style and conception. Pomp and splendour of earthly pageantry, the vainglory of humankind, are manifestly the most obvious features of his typical banqueting scenes. Tintoretto's fame, apart from his power of portraiture, rests upon his vast imaginative compositions, with the character of which Ruskin has familiarized us. His Christ before Pilate is both massive and dramatic. Caravaggio led the reaction from the Eclectics—a naturalistic reaction from conventionalism and academic idealism analogous to the revolt in France under Manet and Courbet. Typical of Caravaggio's style are 'The Death of the Virgin' in the Louvre and the 'Flight into Egypt' in the Doria Gallery, Rome. His new movement, says Sir Charles Holmes, was of such importance to the arts that its effects have endured to our own day. Notable painters of the Ferrarese school were Francesco Bianchi (Giovanni di Niccolò Luteri), Dosso and Battista Dosso, and Benvenuto Tisi (called Garofolo). Garofalo was strongly influenced by Raphael and by Dosso Dosso. His religious compositions, if monotonous and wearisome, are of high technical quality and his classical myths are somewhat too conventional, but his 'Mars and Venus' (Dresden Gallery) has charm.

Post-Renaissance baroque It. architecture and sculpture of the seventeenth century are dominated by the innovator, Lorenzo Bernini. 'The Fountain of the Four Rivers' in Rome and the monument of Urban VIII. are examples of his sculpture. His daring innovation—in the churches, his sumptuous palaces and monuments of marble, bronze, and gold, lent the Eternal City a new-found magnificence. An equally bold innovator of this century was Borromini who first introduced contorted spirals and hollow mouldings. In his lavish use of arabesques and colours he is as far removed from the classical tradition as is Bernini with his love of light effects on gold and coloured marbles. Valvasori's splendid Doria Palace is an illustration of the new rococo style. Other architects and sculptors of the time are Pietro de Cortona, Maderno, and Rainaldi.

Seventeenth century Bolognese painting finds its chief representatives in the Caracci—who founded the School of the Eclectics at Bologna—Barbieri (called Guercino), Guido Reni, and Sassoferrato; but the leading school of the century was at Naples, as illustrated by Giovanni Caracciolo, Mattia Preti, Salvator Rosa, the painter of classical landscape, Luca

Giordano, and Cavallino. Bernardo Strozzi is amongst the best portrait painters of the time. Gian Battista Tiepolo in the eighteenth century is noted for his transparent atmospheric effects. In conception he derives from his contemporary Piazzetta his power of invention and decoration as revealed in the frescoes of Antony and Cleopatra in the Palazzo Labri, Venice. Also of the eighteenth century is Canaletto (Antonio Canal) the painter of the Venetian canals and *campi*. Nineteenth century Italian architecture, sculpture and painting had their leading exponent in Antonio Canova, one of whose masterpieces is the Gangaulli sepulchre. In some sense Canova gave renewed life to the art of sculpture restoring it to that standard from which it had deteriorated when the instinct for classical beauty and austerity of titanic invention and will-nish superhuman energy as embodied in the superlative genius of Michelangelo had yielded to the exuberant mannerisms of the seventeenth and eighteenth centuries. Other names of the century are those of Sabatelli, Domenico Morelli, and Giovanni Segantini, artists of the impressionist school.

Early in the twentieth century Italian artists made a noteworthy contribution to the Futurist movement. Its foremost adherent, Umberto Boccioni (d. 1916) expounded its creed in his *Linea e vite Futuriste*, but he sought to go beyond Futurism and to record not only a set of visual facts from a new angle but also their deepest emotional experience. He came nearest to achieving this ambition in a remarkable series of three paintings—

Leave-taking, Those going away, and Those who remain behind. The Meta-physical school was short-lived. Its aims were set forth by Carrà in *Pittura Metafisica* and its principal exponents were Modigliani and De Chirico. Douglas Cooper has detected the cause of their failure in their inability to break entirely with naturalism and thus the wondrous quality of their poetic visions from its natural form. They were caught in a ready-made fabric.

The next outstanding figure is Giorgio Morandi (b. 1890). Though at first influenced by the Metaphysical painters, he has remained aloof from all movements. He is conservative without being reactionary, a fine technician who works however lacks movement and employs subdued colouring to express his predominant sadness. The dominant personality in painting today is Renato Guttuso (b. 1912) a Sicilian. He like his companions of the Roman school is concerned not with philosophical theories but with human experience in his own day. Guttuso's fierce realism is best seen in four works painted in 1948. 'The Mechanic', 'The Washerwoman', 'The Seamstresses', and 'The Water Melon Stall'. In sculpture the three most interesting figures are Manzù, who (a cardinal was recently bought for the Pitti Gallery) the Scillian Pietro Comaresa, and Marino Marini, who has been described as 'probably the best young sculptor in Europe

today'. All three belong to the Realist school.

*Damage to Italian art in the Second World War*—The most serious losses in Italy's art of Bologna were Bonaventura Cathedral, Santa Chiara and the university at Naples, the Campo Santo of Pisa, the banks of the Arno at Florence, the Tempio Malatestiano (see MALATESTA) at Rimini and the Benedictine monastery of Monte Cassino. On the credit side could be placed the immunity of Rome, save for the church of San Lorenzo and the great Tuscan and Umbrian cities, and also Livorno and Lido. Public exhibitions organised under Anglo-American auspices of paintings and other works of art in Florence, San Marino and elsewhere afforded evidence of the care taken by their custodians to safeguard them while the tide of war swept over. But the red hot rake of the battle line (Micheleuzzi) moved more slowly but more tenaciously might have occurred. But the determination and gallantry of the Allied armies fighting against the grain of a most difficult country and the zeal of the officers of the sub-commission for Monuments, Fine Arts and Archives working in their wake, made it possible to save the greater part of Italy's unique artistic wealth. An attack was the chief cause of damage in Italy of Bologna (greatly taken by the Eighth Army (71) and R.A.I. headquarters) to limit destruction otherwise the tragic reckoning would have been heavier still. But Padua, Vicenza, Verona, Mantua and Bolzano all suffered while Genoa endured the additional affliction of bombardment from the sea. One of the most grievous architectural losses was that of two of the finest historical bridges in Italy—the Ponte Scaligero built in 1331 and the Ponte della Pietra, culist of surviving Roman bridges, both at Verona. These were blown up in spite of assurances to the contrary on April 2, 1945, by the Germans. Sixteen of the twenty churches on the list of protected monuments in Verona as well as most of the fine palaces were destroyed. At Vicenza the cathedral was virtually destroyed. At Padua the destruction of the Franciscan church involved the greatest individual disaster to Italian art. *Official Report by the British Committee on the Preservation and Custody of Works of Art in Enemy Hands* (1946)—The list of the whole series of frescoes by Mantegna at Mantua, the Gothic church of S. Francesco was almost completely destroyed. The old town of Bolzano suffered great harm not only to its individual monuments but to its general character and atmosphere. At Genoa 11 churches, 13 oratories, 13 cloisters, 129 palaces and villas and 3 theatres—all of artist importance—were more or less damaged. The most serious loss being the magnificent interiors of the medieval palaces. At Bologna and Turin the damage was less than might have been feared, and at Milan though there was widespread damage, this seldom amounted to complete destruction and Leonardo da Vinci's fresco of 'The Last Supper'

survived in spite of the fact that the roof of the refectory and the wall opposite the painting were destroyed. *See also under the names of cities and towns.*

*See further under ARCHITECTURE, PAINTING, and SCULPTURE and under the names of individual artists.*

*See M. Bryan, Dictionary of Painters and Engravers, 1903; Selwyn Brinton, Correggio at Parma, with a separate analysis of artists and their works in sculpture and painting (second ed.) 1907; E. G. Gardner, The Painters of the School of Ferrara, 1911; A. V. V. Brown and W. Rankin, A Short History of Italian Painting, 1926; G. Vasari, Lives of the Painters, Sculptors, and Architects (Eng. trans. reprinted in Everyman's Library, 1927); A. V. Starr, A Short History of Italian Art, 1929; Sir C. Holmes, An Introduction to Italian Painting, 1929; T. Borenius, Florentine Frescoes, 1930; F. Antal, Florentine Painting and its Social Background, 1948.*

**Italian East Africa.** The name given by Italy in 1936, after her conquest of Abyssinia, to the territories it occupied in E. Africa. They then comprised the former colonies of Eritrea (q.v.) and It. Somaliland (see SOMALILAND), and were divided into five provs.: Eritrea, Amhara, Galla, Harar and Somalia, the cap., Addis Ababa, being a separate dist. not included in any prov. The total area was 660,000 sq. m., and the pop. was estimated at 7,000,000. The whole of this colonial empire was lost in the second World War in 1940-41.

**Italian East Africa, Campaign in (1940-41).** The conquest of It. E. Africa—Eritrea, It. Somaliland, and Abyssinia, besides the recapture of Brit. Somaliland—was one of the most remarkable campaigns in the annals of African warfare. The lessons of mechanised warfare had been taken to heart, great distances over difficult mountainous country were covered with spectacular ease, the co-operation of the R.A.F. was effective to a degree, while the co-ordination of all the forces, operating from a dozen different directions, pointed to a highly creditable staff organisation. Imperial forces comprising S. Africans, S. Rhodesians, Sudanese troops, the King's African Rifles, and The Royal W. African Frontier Force together with Abyssinian patriot forces, all took part and, in the denouement, following the conquest of Eritrea, some three forces were all advancing at great speed on Addis Ababa where the It. had hoped to hold out long enough for the rains to save them. Not for long, not the least important function of the Brit. forces was themselves to play a similar rôle and to hold in check large It. armies, while Gen. Wavell's forces were advancing on Cyrenaica (see BATTLE OF THE WESTERN DESERT). This accomplished, all the forces were set in motion some advancing from the Sudan into N. Abyssinia and into Eritrea, others northward from Kenya and into S. Abyssinia, others across Ogaden and to Harar, while yet others penetrated W. and S.W. Abyssinia. But at first, following the

fall of France, the Brit. forces, for lack of resources, human and material, were unable to do more than hold frontier posts, yielding them only after stubborn resistance; while Brit. Somaliland had to be evacuated and it even seemed to many somewhat doubtful whether the Brit. would ever be able to counter the main It. thrust against Alexandria and the Suez, the fall of which would have multiplied the difficulties of a campaign in E. Africa beyond conjecture.

The It. began operations by bombing Berbera, cap. of Brit. Somaliland, and by attacking Brit. Moyale just inside the Kenya border, and, crossing the Abyssinian-Sudanese frontier, occupied more Brit. frontier posts. Early in July, S. African and S. Rhodesian airmen bombed It. aerodromes at Dire Dawa an important town on the railway from Addis Ababa to Djibuti in Fr. Somaliland, (which colony was now under the orders of the Vichy Gov. of unoccupied France and in no sense an ally of Britain), and Massawa, the chief port of Eritrea. On Aug. 5 the It. invaded Brit. Somaliland from Abyssinia moving on Odweina, Hargeisa, and Zeila. The colony was defended only by mobile motorised units of the Somaliland Camel Corps. Zeila was occupied without opposition. Hargeisa was taken by a force including tanks, artillery, and aircraft. The Brit. delaying force fell back. Zeila, under the original plan was to have been defended by the Fr. but, owing to their collapse, it was not advisable to send Brit. forces to take their place as they would have been isolated from the main garrison in Brit. Somaliland, small as this was. On Aug. 11 the It. made a general attack on positions covering Jugargan Pass. The Brit. staff decided that it was impracticable to defend Brit. Somaliland and more advantageous to make the enemy use up his supplies in what was, strategically, a wasteful enterprise—a policy which later proved justified. The It. were using two divs., complete with artillery and armoured fighting vehicles, originally intended to oppose the Fr. forces in Fr. Somaliland. At this stage all the Brit. could do was to bomb It. positions at Juba, Maraca, and Dessie in Eritrea and Abyssinia, as well as harass the It. advance in Brit. Somaliland. But the Brit. forces, although unreinforced, continued to resist with great determination all the way to Berbera. Eventually, however, the Brit. troops were evacuated from the colony all the guns, excepting two lost in the campaign, being unbarbed and the stores destroyed. The original disposition had been based on the scheme of Anglo-Fr. collaboration under which the Brit. forces at Djibuti were to hold the right flank, the pivot of the whole position. The only sound course in the circumstances was to fight rearguard actions with the small force available and to inflict the maximum losses on the enemy until evacuation became inevitable.

On Aug. 19 R.A.F. bombers raided Addis Ababa for the first time. S. African and S. Rhodesian squadrons also raided Mogadishu, cap. of It. Somaliland,

and railway buildings in Kassala in the Anglo-Egyptian Sudan—which was in enemy occupation. Extensive raids were carried out a few days later by Brit. and S. African bombers on aerodromes at Neghelli, Jellib, Kismayu, and Mogadishu—notably on that of the last-named town. All through the campaigns against the Ites, whether in Cyrenaica or in E. Africa, the Brit. command adopted the sound course of bombing the enemy's planes on the ground or fighting them out of the skies so that, ultimately, when the Brit. turn came to advance, the Ites were hampered for lack of aircraft and of undamaged aerodromes and, indeed, the process of destruction of machines continued right through the campaign. Brit. losses in planes and pilots being relatively slight.

There was now a lull in operations. Numerically the enemy was in a formidably superior position. But he met stout Brit. resistance, and where by sheer weight of numbers and metal he forced a way through, it was only to encounter a dogged opponent, who contested literally every foot of ground. In the conditions in which the Brit. forces were placed by reason of the collapse of France a greater military nation than the It. would have captured Aden and Egypt. Their failure to make any substantial progress anywhere in Africa while faced by forces negligible in numbers gave their opponents encouragement in a time of gloom.

Over two months later Mr. Anthony Eden, war minister, toured the Middle E., while Gen. Smuts toured E. Africa, to inspect the Brit. defences. This was the preliminary to the turning of the tide, which began with the capture of Gallabat, on the Abyssinian-Sudanese border, which important position had been taken by the enemy in June. This capture was made by Brit. and Indian troops, with tanks and artillery, and with the co-operation of the R.A.F., the enemy being taken by surprise. The R.A.F. also attacked the key positions of Agordat and Keren in Eritrea and bombed Assab, a port in Eritrea. The enemy now began to appreciate his danger, fighting grew fiercer, and in the next four days Gallabat changed hands sev. times. Asmara, cap. of Eritrea, (Gura, and Massawa, Eritrea's chief port, were bombed, while Brit. artillery fire forced the enemy to evacuate Metemma, 2 m. from Gallabat (Nov. 24). At the same time Asosa and Gondar in Abyssinia were raided by the R.A.F. who gave the Ites no respite anywhere. At this period (Nov. 1940-Jan. 1941) the focus of interest was the battle of the W. Desert. Wavell's spectacular advance to Benghazi being facilitated by the fact that Gen. Cunningham's operations in It. E. Africa prevented the duke of Aosta, commander-in-chief in It. E. Africa, from rendering Graziani any help.

On Jan. 13 Haile Selassie (q.r.), who was now in Khartoum, announced that he would soon cross the Abyssinian frontier and lead an Abyssinian army against the Ites. The revolt, fomented by the Brit. in that country, was now making great headway. The Imperial standard had been

raised at Gollam by Ras Mengasha and the war drums were rallying the Abyssinian patriots. Haile Selassie said that, like Marshal Badoglio (q.r.), he would enter Addis Ababa on a white horse, tear down the figure of a wolf erected by the Ites in the square, and reinstate the white marble statue of the Lion of Judah (the original of which had been taken to Rome). Ras Kassa, one of the leading Abyssinian generals in the Abyssinian-It. war, arrived in Khartoum on Jan. 21 to join his emperor.

By now Brit. troops were successfully advancing into Eritrea, while Indian troops were marching over the Sudan frontier. A contingent of regular troops of a newly-formed Abyssinian army went into action on the 22nd in the Sudanese-Eritrean war zone, the command being given by Haile Selassie to a young Australian artillery lieutenant. Haile Selassie had actually crossed the frontier a week earlier, hoisting the flag of Ethiopia on his native soil in the presence of Brit. and Abyssinian troops and accompanied by the Crown Prince and the duke of Harar and Ras Kassa. Keri and Aicota, together with 600 It. prisoners and two guns, fell to the Brit. forces on Jan. 29. From Kenya patrols had crossed the frontier at numerous points without meeting with the enemy. In Eritrea the Brit. attack was now concentrated on the Agordat-Barentu area. The distances and physical obstacles of this difficult region were overcome by strong concentrations of Imperial troops through the labours of the Cape Mechanical Transport companies. By the end of the month operations were developing on all African fronts—the Sudan-Abyssinian frontier, Kenya-Abyssinian frontier, Eritrea, and It. Somaliland—while revolt was spreading in Abyssinia. Agordat fell on Feb. 1—giving the Brit. a junction of considerable strategic importance on the Red Sea railway. Brit. and Indian troops, with R.A.F. support, stormed the position, capturing a dozen tanks, and driving the enemy towards Barentu and Keren—a stronghold surrounded by natural rocky fastnesses of great height. Other It. forces, harassed by Abyssinian patriots, withdrew from the Eritrean-Abyssinian frontier, abandoning their mechanical transport, and soon they were in full retreat towards Gondar closely followed by mobile forces. Throughout Feb. the enemy in Abyssinia, Eritrea, and It. Somaliland was always in retreat save at Keren—a stronghold on which every device of military engineering skill had been lavished. Here the enemy had sought to make a stand after being driven out of Barentu (Feb. 3) leaving hundreds of killed and wounded with many guns and other equipment which were of great use for arming the Abyssinian patriots.

The Imperial troops now laid siege to Keren. It was to prove the most costly operation of the whole campaign, but by Feb. 7 over 3500 prisoners had been taken, and wherever the enemy gave ground war material littered his track. There were now in simultaneous operation some five movements: the penetration of



It. Somaliland by S. African troops; an advance in S. Abyssinia by S. Africans; an advance through the N. part of Abyssinia, a patriot advance from the W. into Abyssinia and in S.W. Abyssinia; and the attack by mixed troops on Keren. The important port of Kismayu (It. Somaliland) fell to the S. Africans on Feb. 15. The attack was carried out in co-operation with the Royal Navy and the S. African air force. Five days later the troops were across the Juba R., while other troops from that dominion took Mega in S. Abyssinia, an It. air base some 6500 ft. above sea-level and the head

announcement that occupied territory, formerly ruled, claimed, or occupied by the It. gov. in Ethiopia and Somaliland were placed under the military jurisdiction of Gen. Alan Cunningham, general-officer-commanding, E. Africa. Dagga Bur, 600 m. N. of Mogadishu, fell to the victorious imperial troops on March 10, Harar being their next objective. It. losses since the opening of the Somaliland offensive had now reached 30,000 prisoners, while practically the whole of It. Somaliland, a great part of Eritrea, and enormous supplies of war material had fallen to the Brit. forces.



*Imperial War Museum: Crown copyright*

#### ABYSSINIA: THE OMO RIVER GORGE

A British officer studies Italian defensive positions seven miles away

of an important motor-road to Addis Ababa. Later in the month the Imperial forces made a remarkably rapid advance in It. Somaliland. They took Mogadishu, the cap., on the 25th after a march more rapid even than that of the army of the Nile in Cyrenaica. This gave them the centre of a good road system and so demoralised the enemy that over 9000 of them surrendered. On the Kenya-Abyssinia border Abyssinian irregulars drove the It. from their last footholds in the Brit. colony by taking both Brit. and It. Moyale, positions which had proved almost as stubborn as that of Keren. On the first day of March an important pass covering the approach to Keren was captured by an Anglo-Fr. force advancing from the N., the Fr. troops being Senegalese who had trekked across the continent to Port Sudan to help the cause of Free Frenchmen. Burye, an important It. fort, fell to the patriots on March 4, and the same day was noteworthy from the

Penetration into Abyssinia was now in progress on twelve fronts, including a thrust on Gondar in the N., a drive by patriot forces towards Debra Markos, the next goal after Burye; a Brit. advance on Harar from It. Somaliland; a thrust from the Sudan to Afodu; and other penetrations in the Blue Nile region of S.W. Abyssinia. But time was nonetheless an essential factor in the general plans of the Brit. authorities. The longer Keren held out the greater the possibility of the rains saving the It. On March 16, however, Brit., Indian, and Sudanese forces, strongly supported by the R.A.F., made a most determined attack on precipitous positions covering Keren and stormed three important heights 3000 ft. high, under cover of well-directed gun fire and bombing. Reverting to the earlier days of March, the position was that the Brit. All-Africa column (Gold Coast and S. African Forces) and Brit. and Patriot Ethiopian forces were all

converging on Addis Ababa. For the first fourteen days of the month the All Africa column averaged over 40 m a day across rising uplands on Abyssinia's E threshold. Other forces around Lake Tana were then nearer Addis Ababa but the formidable barrier of the deeply canyoned Blue Nile retarded their progress. The Imperial Army from Fritrea was fighting at the immensely strong position of Keren, the biggest battle of the campaign. A trail of abandoned ammunition and material along the modern tarmac road marked the headlong flight of its soldiers. The All Africa column was chasing two disorganised enemy divisions which were desperately trying to find a way back across the desolate Ogaden landscape. By mid March the strategic position of Jijiga 30 m E. of Harar, lay ahead of the All Africa column. The question was whether the Its would make a stand there or in the hills round Harar. But air reconnaissance found Jijiga almost deserted whence it was inferred that Harar with its high mud wall pierced by five gates would prove the key to the whole campaign. Yet it was doubtful whether the Its could spare as many as 10 000 troops for its defence—the number believed to be concentrated in the vicinity. Already their crack grenadier units had been sent to Keren and at all costs they must hold that position and the Blue Nile crossings. They had also to keep garrisons everywhere to ward off patriots while finally they had already lost over 30 000 prisoners, a serious depletion of the 500 000 men Italy was supposed to have under arms in E. Africa.

Meanwhile, on March 18 Berbera was retaken as the result of a combined sea land, and air operation. Imperial forces soon the whole of Brit. Somaliland was recaptured, the Italian operation having thus lasted some seven months. Indications were, however, that the Its never effectively occupied the colony, failing to organise even a semblance of administration. Berbera was actually taken with little fighting, a tribute to the skill and daring of the operation which was effected by two landing parties, one mainly of Indian troops the other of Arab and Somali volunteers. The significance of the rapid advance to Daggabur (600 m N of Mogadishu), towards Jijiga and Harar, was that in this neighbourhood existed one of the chief passes into the great mountainous plateau known as the Abyssinian Highlands. The Its hoped to retire to this natural fortress and hold the limited number of practicable inlets in the expectation that the coming rains would restrict British operations to comparatively small columns. The series of operations in E. Africa was, in its way, as brilliant as the campaign of the W. Desert. If the army of the duke of Aosta was less formidable than that of Marshal Graziani the natural difficulties of the terrain were greater. If the pace was slower, except for the rapid advance northward from the Webbi Shibli in the direction of Jijiga and Harar, the size of the tasks which

formed the objective was far greater. The manner of the development of the campaign was in itself remarkable. Apart from minor operations, it began with an outstanding success in the N., between Kassala in the Sudan and Igordat, in Eritrea. Then at Keren as we have seen the Its found an extremely strong position where for weeks on end they offered a vigorous resistance and contrived to hold up the British advance on Asmara and Massawa. The Brit then initiated a gigantic turning movement from the N., which made rapid progress at first, but for long could not dislodge the enemy at Keren.

By March 27, however, the road to Asmara was open to the victorious troops of the Imperial Army of the Sudan. The final attack was delivered after fourteen days of fierce fighting, an attack which battered down the last remnant of enemy resistance and carried the Brit troops triumphantly into the town. Guns, cars, and great piles of rifles and equipment encumbered the roadside. The It garrison numbering 10 000 including Savoy Grenadiers, Carbiniers, and Alpini, with nearly 200 guns fought from prepared positions of great strength on peaks 4000 ft above the Eritrean plateau. They poured a withering fire on the Brit troops toiling up the steep slopes in a temp. of well over 100°. But nothing could deter the advance, not even reckless counterattacks by the Its, who realised that the fall of Keren meant the loss of Eritrea, the one really loyal It colony, the one outlet to the sea from the fastnesses of doomed Abyssinia. In Keren gorge where 1 m from the town the Its blazed 200 yds out of the road to thwart the Brit advance, the Brit soldiers fought hand to hand with machine gun crews which had been covering this obstacle. Harar fell at the same time and with this double success, the Brit obtained possession of three quarters of Eritrea and practically sealed the fate of the It force left in what remained of Mussolini's E. African empire. The last phase of the campaign now opened with the general crumbing of the force left to the duke of Aosta, viceroy of Abyssinia, Brit planes actually taking off It women and children to places of safety.

At the beginning of April more than half Abyssinia was in Brit hands. From Asmara Gen. Platt's troops were climbing down into 5000 ft high to capture Mekele while another column was reaching up the road to Adowa, the occupation of which was calculated to have a strong moral effect on both the Its and the Ethiopian patriots. In the central part of the front Gen. Cunningham's troops were marching from Harar and Dire Dawa along the two roads that converge at Mekele 150 m from Addis Ababa. Flying ahead 5 African pilots were destroying the railway and road at Welenchilli and Adama 40 and 60 m respectively, from the cap. In the S., the It garrison at Soroppe, near Lake Rudolf, was surrounded by African troops and surrendered. The sole port now left securely in the hands of the Its was Assab, for already Massawa

was threatened, and the navy were closely watching it. The only considerable tns. held by the enemy in the interior were Dessie, Gondar, and Addis Ababa. Gondar was all but cut off by Abyssinian patriots, who were pressing on round Lake Tana and the sources of the Blue Nile. Dessie was filling with retreating soldiers from Eritrea, who, while streaming through the Green Valley were subjected to a major bombing attack by the S. African squadrons who raked the roads in the valley from end to end. Revolt was now sweeping the country behind the It. lines. Ironically, along the Addis Ababa railway, Brit. imperial troops were hurrying to protect the Its. against their own native conscripts. Abyssinian deserters were sniping the Its. from the surrounding scrub everywhere except at Dessie and Addis Ababa, where It. white troops still outnumbered them.

The historic battlefield of Adowa now fell into Brit. hands and then the holy city of Axum, and on April 9 Massawa capitulated. In the whole country there were now left only more or less disorganised bodies of troops, groping their way towards Dessie, Gondar, and Jimma. Merce fighting in the Kombolcha Pass, 14 m. S. of Dessie, was the prelude to the Brit. capture of this mt. stronghold in the last days of April. But there was still a strong force of the enemy under the duke of Aosta, at Amba Alagi, another mt. stronghold. Here the Its. held out for nearly three weeks. By May 14 the enemy had been driven back by the S. Africans to the peak of Mt. Alagi, where they had tunnelled galleries into the cliff faces and cut gun emplacements out of the rock. Machine-guns and artillery fired from the narrow mouths of caverns where they were immune from anything except by direct hit. But there was one weakness in this well-nigh impenetrable stronghold. The long-prepared defences were intended to meet an attack from the N., and the S. Africans were piercing the vulnerable S. side. The siege of Amba Alagi reached its crimmest stage on May 14 when a terrible artillery bombardment almost wiped out the It. forces. Deserters at night stole their own lorries to escape. The Transvaalers blasted the Its. out of their dug-outs. Few escaped to carry back the tale of terror to the duke of Aosta's cavern—the very cavern in which Haile Selassie had sheltered five years previously from his It. conquerors. Some ten days later the duke of Aosta formally surrendered, together with some 19,000 prisoners. Thereafter there remained only small pockets of hopeless resistance. In only four months a well-equipped force of 135,000 Its. and 200,000 native troops, of which 170,000 were infantry, with a considerable air force and 212 aerodromes, under an able commander, had been smashed and scattered. Of this great host the Brit. forces under Gen. Cunningham had captured about 190,000; 125,000 had deserted leaving nothing remaining in military formation, apart from one or two small bodies, numbering altogether 6000, who were soon to be rounded up. The

hollowness of the It. claim that their opposition had contained in Abyssinia large numbers of Brit. troops who were urgently required elsewhere is shown by the fact that the Brit. forces at the beginning, when Italy took up arms, numbered fewer than 25,000 men, of whom only 5000 were white. At no time did the Brit. forces on all the fronts in E. Africa, even after the arrival of reinforcements from India and W. Africa, approach the strength of the combined It. metropolitan and native armies. And again, whereas the It. garrison had begun with hundreds of heavy guns, the Brit. forces had no more than 68 field guns. Yet in four months the Imperial forces under Gen. Cunningham had conquered three countries and reconquered a fourth, totalling some 700,000 sq. m., captured 120,000 prisoners, 800 heavy guns, and 150 tanks, as well as thousands of motor vehicles, thousands of machine guns, and millions of rounds of ammunition. Most preconceived ideas of colonial warfare were abandoned. In this remarkable campaign sheer speed broke the Its. The Brit. concentrated superior fire-power in a few unexpected places. Gen. Cunningham's victory was the story of battles which began among the swamps of the Juba R. that cuts off Kenya from It. Somaliland. He forced a passage over the stream at two points, cut through the It. lines, and his two columns converged on one another till they met behind the enemy and formed a triangle at the apex. In one increasing wave the Brit. forces swept up the coast through Kismayu, Brava, and Mogadishu, then wheeled left across the desert with lines of communications lengthening to 1500 m. Great tracts of unconquered ter. lay on either side, but still the Brit. forces pushed ahead, lorries, guns, hospital and staff cars roaring up the road to the all-important position of Juba. It was untechnical and unprecedented, but the Fascist forces, bewildered at the loss of morale, which spread rapidly through their ranks at length surrendered their chief stronghold, Keren, and that was really the beginning of the end. It is not a little strange that, at the beginning, between June and Sept. 1940, the Its. did not follow up their only success in capturing Kassala and Gallabat by a mechanised push on Atbara, the vital transport centre of the Sudan, and Khartoum. Such a move might well have brought the whole country under their yoke in a few days. In Kenya, too, they were advancing from Moyale to Buna, and in the Sudan, in Oct., they launched a drive into the S. of the country which, if better supported, ought to have reached the great Sennar Dam. The secret of the Brit. avoidance of disaster at this critical juncture, was that while machine-guns were being mounted on the walls of Khartoum, and tanks traps laid before them, the Brit. generals, by a policy of aggressive patrols and then rapid movement of their small forces, caused the enemy to believe that they were opposed by numbers tenfold as great as they really were.

It. resistance did not end entirely with the surrender of the duke of Aosta. The disorganised garrisons of scattered strongholds, particularly at Jimma, Debri Tabor, and Gondar in N. Abyssinia, protected by the seasonal tropic rains, held out for some weeks the last remnants of Mussolini's great army of Abyssinia. During this period, Ethiopian patriot troops took an effective part in operations which resulted in the capture by those forces alone of some 10,000 prisoners. The It. commander of the garrison at Debri Tabor, 60 m. E. of Lake Tana, surrendered early in July (1941), not long after the fall of Jimma, and with his surrender, the sole important remaining garrison was that at Gondar, a strong natural position almost comparable with Keren. In the 'Battle of the Lakes', the operations which virtually ended with the capture of Jimma on June 20, and resulted in the elimination of It. resistance from a vast area S.W. of Addis Ababa, the Brit. forces took over 30,000 prisoners and more than 100 guns. See also ITALO-ABYSSINIAN WAR, 1935-36. *Abyssinian Campaigns: Official Story of the Conquest of Italian East Africa (H.M.S.O.)* 1943; Christine Sandford, *Ethiopia under Haile Selassie*, 1946.

**Italian Front, First World War Campaign on.** Italy declared war on Austria-Hungary on May 23, 1915, and a general mobilisation was ordered for the next day but war was not declared against Germany until Aug. 23, 1915. On May 25 It. forces penetrated Austrian ter. in S. Tyrol and the N.E. corner of Venetia and along the Isonzo (q.v.). Gradisca was occupied within a few days and the crossing of the Isonzo promptly followed. On the W. flank progress was being made in the Trentino. Austrian posts on the Alps were taken by the Its. in rapid succession. At the end of May the frontier was crossed at Lake Garda at Riva (N. end of the lake). During the first week of June there was a stiffening of the whole line, and fighting became more serious. On July 20, the Its. gained a victory in an all-day fight on the Lower Isonzo. This developed into a series of conflicts on the Carso (q.v.). In Oct. the W. flank was improved by securing Mt. Nodda which gave the Its. command of the Ledro valley. During the winter of 1915-16 the Austrians were preparing a counter-offensive in the Trentino under the command of Archduke Charles, with Field-Marshal von Hotzendorff as his Chief of Staff. The attack was launched on May 14 and by May 19 the Its. were in retreat on the whole Trentino front and the Austrians reached It. soil. In ten days they had captured 21,000 prisoners and 250 guns. Asiago (q.v.) fell to the Austrians on May 29, and although their flanks were held, their centre continued to advance. The Its. counter-attacked, and by June 26 had recovered a good deal of ground. Gen. Cadorna (q.v.) the It. commander-in-chief, launched an offensive in the Isonzo on Aug. 6, 1916, and captured the bridgehead at Gorizia, with 10,000 prisoners. Further progress westward continued throughout the month. On Sept. 10, the Its. advanced

their right flank on the Carso and throughout Oct. and Nov. continued to press the Austrians back on their N.E. flank. In May 1917 a great offensive on the Isonzo was launched, progress being made chiefly N. of Gorizia, and with the help of Brit. guns a serious threat was made to the Austrians on the Julian front. Brit. monitors also fired on the rear of the Austrians from the gulf of Trieste. In June the Its. made some progress in the Trentino. On Aug. 19 they resumed the Isonzo offensive mainly across the Carso, and by the end of the month the high ground S.E. of Udine was in their hands. About this time, Ger. troops, under the command of Gen. Otto von Bulow, were being transferred to the Isonzo front, and attacked the Its. on Oct. 24, 1917. The Its. were thrust back at Caporetto (q.v.), and the rout continued until the Gers. captured Udine on Oct. 29. This exposed the Its. on the Carso to the danger of envelopment, and a hasty withdrawal was made to the Tagliamento: but here the Gers. forced a passage and the situation became critical. At this time five divs. of Brit. troops under Gen. Plumer arrived on the It. front. In Nov. 1917 Cadorna was succeeded by Gen. Diaz. The Its. defeated all attempts of the enemy to pierce the Piave front, so they turned their attention to the mt. sector further N. Here they gained some points, but the presence of Brit. and Fr. troops prevented any serious loss. In May 1918 Lord Cavan succeeded Gen. Plumer in command of the Brit. troops. On June 15, 1918, the Austrians launched their final assault. They attacked on a ninety-m. front with forty divs. from Asiago to the sea. The Piave was crossed at Montello, and Venice also was threatened, but the sector held by the Brit. stood firm against all attacks. Before the end of the month the Its. counter-attacked with the result that the Austrians were soon in full retreat. On Oct. 26 a great offensive was launched against the Austrians which turned the retreat into a rout and ultimate surrender. See L. Villari, *War on the Italian Front, 1932*; G. L. McEntee, *Italy's part in winning the World War, 1934*.

**Italian Front, Second World War Campaigns on.** For the events leading up to this campaign, see AFRICA, NORTH, SECOND WORLD WAR CAMPAIGNS IN.

*Fall of Pantelleria, Lampedusa, and other small Italian islands.*—Pantelleria, which, after 1937, was strongly fortified as a naval and air base, surrendered to allied forces on June 11, 1943, and was occupied by allied forces very shortly after the white flag was seen from the air flying from a hill top. This surrender was the first instance where a strongly defended enemy bastion has been conquered from the air. The air attack began thirteen days previously and by June 11 had swelled to a terrifying climax. Bombers, fighter-bombers, and fighters were sent against this one target. Flying Fortresses in greater numbers than ever previously used by the N.W. African Air Forces, made repeated sorties throughout the offensive, which lasted from dawn to dusk. Twice

the allied commander gave the garrison (numbering 10,000) a chance to end the destruction, and twice the garrison rejected the offer. The air bombardment was supported by naval bombardment and towards the end of the attack strong forces of cruisers and destroyers were firing salvoes at frequent intervals. Early in the offensive the airfield was wrecked. Every ship in the harbour was put out of commission. By dusk of June 10 the 1st batteries, well-concealed and in heavy gun emplacements, were silenced and the 1st's doom sealed. In addition to the garrison there were 6000 civilians on the 1st, but, happily, they suffered hardly any casualties, for the 1st consists of volcanic rock which is full of galleries and air-raid shelters. Lampedusa and the still smaller 1st of Linosa, both in the Pelagie group just over 100 m. S.W. of Sicily, held out but a very short time after the surrender of Pantelleria. Lampedusa was subdued after a naval bombardment followed by a heavy air attack and Linosa surrendered without a fight.

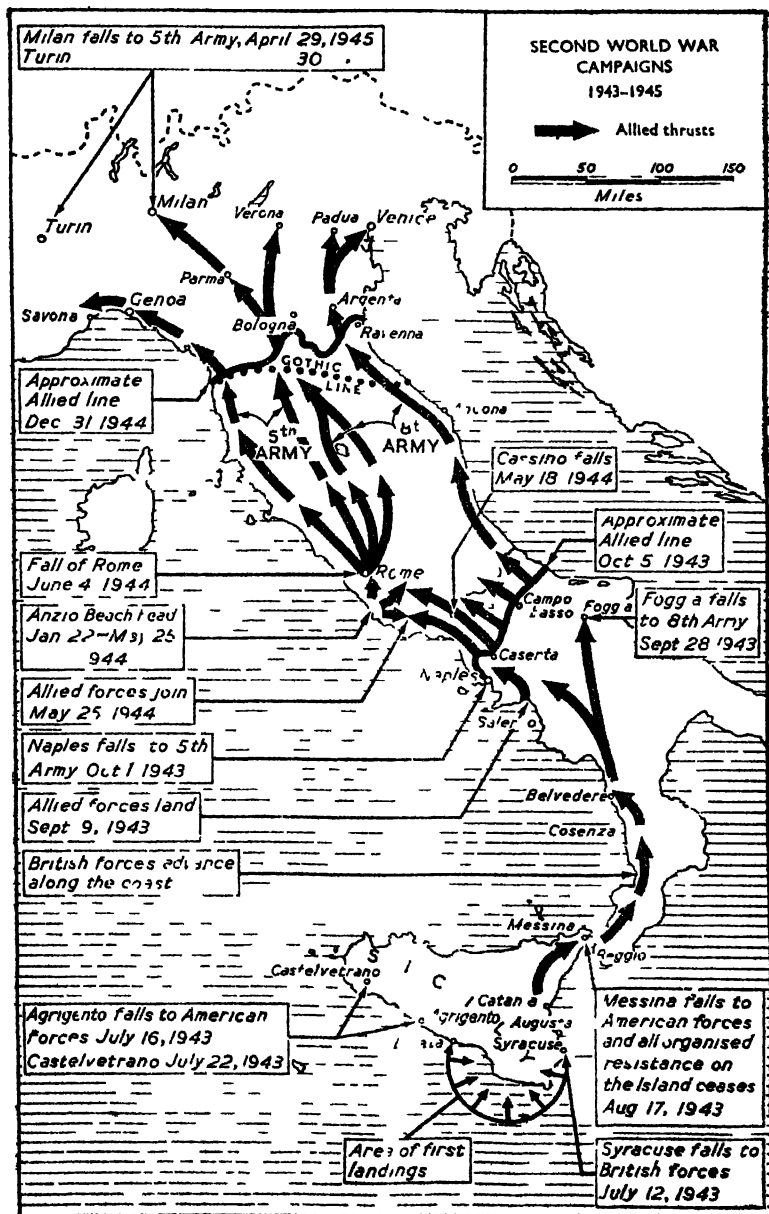
*The Battle of Sicily (July–August, 1943)*—Anglo-Amer forces under Gen. Alexander as deputy commander-in-chief, with Gen. Montgomery as commander-in-chief of the Brit. forces, in an armada of nearly 3000 vessels, invaded Sicily early in July, 1943. The first stage of the invasion started on July 10, soon after the occupation of Pantelleria and Lampedusa, when the allied air forces crippled the Axis air-bases in Sicily. This was so effective that the second stage, the establishment of bridgeheads in the 1st, was easily accomplished and the landings, preceded and accompanied by terrific air assaults and broadsides of warships commanded by Adm.-of-the-Fleet Sir Andrew Cunningham, on a 100-m. wide stretch of the coast from S. of Catania to Gela, met with only negligible resistance. The core of the invasion consisted of the seasoned troops of the Brit. Eighth Army, the Amer. Seventh Army and Canadian forces (First Canadian Infantry Div. and the First Canadian Army Tank Brigade). In the initial operations a large part was played by the troop-carrier command of the N.W. African Air Force and by paratroops, Amer. and Brit. Allied air forces acted throughout in close co-ordination with the sea and ground forces. 'Lightning' aircraft left a trail of ravaged lorries, armoured cars, and railway trains, and, in the vicinity of the ports, of small ships. Heavy day bombing attacks were made on Gerbini, Trapani, Milo, and Sciacca. Brit. raids by 'Wellingtons' were made at night on Syracuse and Catania. The Amers. took all the beaches assigned to them within three hours of their first landing. The strongest opposition was met in the Cape Passero area by Brit. and Canadian forces. The landings generally were less costly in casualties than had been expected and many hospital ships were held in reserve because they were not wanted. The next task was to secure the possession of the harbours and centres of communication on the coast and close behind it. By July 12 Gen. Montgomery,

with the Canadians on his left flank, seized the road and railway S.W. to Pozzallo in the extreme S. of the 1st, together with the port of Syracuse. In the other zone of operations—the bay of Gela—the Amers., under Gen. Patton, seized Gela, Licata, and other places along the Syracuse-Pozzallo road. Seven enemy counter-attacks, the strongest in the direction of Gela, were made with tanks and infantry and all were repulsed, 2000 prisoners being taken. Ragusa, Floridia, and Augusta fell on July 13 and two thrusts were now made from Syracuse and Augusta, northwards towards Catania and S.-westwards to the Palazzolo heights which dominate the plain of Catania. Most resistance came from two Ger. panzer divs., one facing the Brit. in the E. and the other the Amers. in the S. The allies soon penetrated in some sectors to a depth of 20 m. from the coast. By July 14 the Brit. Eighth Army was within 15 m. of Catania, but resistance was now obviously stiffening. In the W. the Amers. captured the important airfields of Comiso and Ponte Olivo. By this time over 12,000 prisoners had been taken, of whom 8000 were taken by the Amer. army. Though the Allied advance was speedy it was recognised by the commanders that, until the Catania plain and the Gerbini airfields were in their hands, resistance would be protracted, particularly in the mountainous regions of the N.E. and around Etna. Considerable gains, however, were made on July 15–16, the Eighth Army advancing sev. m. beyond Augusta, and its spearheads striking into advance units of a powerful Ger. force. Heavy losses were inflicted on the Axis forces in the W. sector, where the Amers. advanced sev. m. across difficult country. Simultaneously with these operations, the heaviest combined air assault theretofore launched from N. Africa was made on Naples (July 17) by more than 500 aircraft mostly from the N.W. Amer. Air Force, part of the Neapolitan naval arsenal being destroyed. Agrigento fell to the Amers. on July 16, a day of confused battle, with guns firing steadily from almond orchards and olive groves all round the city; but its ten towers were unscathed. At the same time Porto Empedocle, named after the Sicilian philosopher, also fell. The following day (Caltanissetta), on the railway linking Agrigento and S.W. Sicily with Catania and Messina, was taken by Gen. Patton's troops, 20 m. to the E., the Canadians took Piazza Armerina and both Amers. and Canadians were now advancing on Enna, the most important junction in the 1st. The Eighth Army, which had the hardest task in the campaign, was now some 3 m. from Catania. On July 19 Rome was raided for the first time, when Amer. bombers attacked marshalling yards and railways—a raid which was to have immediate and profound effects on the political situation in Italy. On July 21 Linosa fell and Amer. and Canadian forces were now threatening to turn the whole enemy line. With the Amer. Seventh Army were Moroccan Goums, who distinguished themselves as

mt infantry just as they did in the coastal mts of N. Tunisia. With the Eighth Army's estab on July 19 of a bridgehead S. of Catania the Axis forces now began a general though orderly retreat towards Messina. In the area S. of Catania about 6 m. in width and 1 m. in depth, the Germans had frequent counter attacks despite mounting casualties. Among their troops were remnants of the revived Hermann Goering Panzer Grenadier Div but their numbers were dwindling. Casualties to Brit forces were far lower than had been anticipated. The Allied advance in the W. half of the is. continued with great rapidity. Castelletto with its important airfield, originally built for patrolling the Sicilian channel fell on July 22. Marsala was then abandoned by the Axis troops. The threat to Palermo was accentuated Allied troops being now only 25 m. away, while other troops of the Seventh Army were nearing the bay of Termini on the N. coast. Palermo fell to the Seventh Army on July 23, the enemy being completely surprised by a rapid thrust by advanced troops of highly mobile forces. By this time the Seventh Army had taken 27,000 prisoners, 250 guns and 10,000,000 rounds of ammunition besides destroying 84 tanks. The success of the Sicilian campaign coupled with the bombing of Rome, now had its political repercussions in Italy. For Mussolini resigned and the king of Italy assumed supreme command of the It. armed forces with Marshal Badoglio as the new prime minister. By the end of July the number of prisoners was 75,000, three fourths of this total being taken by the Amers and it was now clear that the battle of Sicily had entered its culminating phase—the struggle for Catania and Messina. The general offensive for these positions began to develop in Aug. following a week of intensive preparation during which large reinforcements of men and guns had been moved up to the front. The Brit 78th Div captured Centuripe after some very bitter street fighting. The 1st (Highland) Div. advanced on their right. To the left the Canadians captured Rexaluto where the opposition was especially fierce. Further N. the Seventh Army captured Trapani (Aug. 2), Cerami and Caltanissetta. On the coast road the advance continued in the face of extensive enemy demolition. But the fate of Catania had been sealed at Centuripe, nearly 20 m. away, for the commanding heights here gave the allies control over the road from Catania round the W. of Etna in the same way that the Navy had given control of the sea round the E. of I. Iona. In such predicament the enemy had no alternative but to fight in the city to the last or to escape under cover of darkness. He chose the latter. One strong reason for retirement was that greater threats to the mainland of Italy were now impending. Brit forces entered Catania early on the morning of Aug. 5, the city being taken without a shot being fired. Following on the capture of the tn. of Bronte the immediate objective of the Allied forces was Randazzo on the N.W. side of Etna and the key to the whole

Axis defence. The Amers, having landed parties at two points on the N. coast so as to command coast roads to Randazzo, while the Brit took Acireale, the respective Allied armies were now fast converging on Randazzo. German resistance had now however become more tenacious than ever. The enemy tactics relied above all on demolitions and minefields protected with well-sited machine guns, their hope being to evacuate the bulk of their armies under cover of rearguard actions to the It. mainland. The rugged terrain was well adapted to these tactics. Randazzo however, eventually fell (Aug. 13) to the steadily concerted Allied pressure. The enemy had already been driven from most points N. of Randazzo, and (Mazze and Riposto) on the E. coast had been occupied. The Axis line in Sicily now collapsed and their forces were in full retreat. Messina fell on Aug. 17 to the Amers who made contact there with the Brit. Eighth Army later on the same day. All organized resistance in Sicily had now ceased. The Sicilian campaign had thus ended after thirty-eight days and the Allied forces stood 34 m. from the It. mainland. Owing to the proximity of the mainland the Germans were able to run the gauntlet of air bombardment in the straits and to bring a large part of their troops away. Generally, their retreat never became a rout. The conquest of Sicily finally sealed the mastery of the narrow seas to the S., where previously only Malta held out in lonely loyalty and the possibilities opened up were now almost unlimited. The total Axis casualties were 165,000. Of the 10,000 to 15,000 Germans on the is. at least 10,000 were lost. Many of these were killed between Aug. 5-17 when the Allied air forces destroyed or damaged some 400 vessels trying to cross the straits. Over 100 main guns and 260 tanks were destroyed or captured, while well over 100 aircraft were brought down or captured. The Allies lost 103 tanks and 251 guns, and comparatively few aircraft. The total allied casualties were about 25,000—about 14,000 Brit and 11,000 Amers.

**Allied Invasion of Italy.**—Prior to the actual landing on It. soil, Brit and Amer warships shelled roads, power stations, railways and other objectives particularly in Calabria. Reggio, where were important airfields, was also heavily raided from the air. Stromboli and the Lipari is. surrendered to Amer naval forces at the same time. Some days later the Allies directed a great air offensive against the It. railway system to sever its S. arteries. Foggia, Salerno and Benevento were among the most severely attacked places. The Brit. Eighth Army landed near Reggio di Calabria and advanced, without encountering much opposition, on Palmi. Then Allied air forces, operating in great strength made a prolonged attack on the Naples area, the main effort being against airfields. All these formidable attacks, coupled with invasion, quickly had political repercussions, for on Sept. 8, Gen. Eisenhower announced that the It.



Gov. had surrendered its forces unconditionally and an armistice was granted. Hostilities between the Allies and the forces under Marshal Badoglio (g. r.) therefore ceased and all Its. who co-operated in ejecting the Gers. from Italy were promised Allied support. The Fifth Army under the Amer. Gen. Clark, including a Brit. corps, landed near Naples at 4 a.m. on Sept. 9, the Brit. and Amer. warships covering their disembarkation. Soon three Allied forces were advancing inland from each corner of a great triangle to seize the whole of the foot of Italy. The Fifth Army was meeting intense Ger. opposition on the Salerno beaches in a struggle which was developing into a great battle for Naples. Part of Montgomery's Eighth Army was advancing northwards in Calabria. Other elements of the Eighth Army, having taken Brindisi and Taranto, were following retreating Ger. forces to the N. of those tns. The most desperate fighting occurred for the Salerno bridgeheads, the tn itself having quickly fallen. The Gers. hoped to hurl back the invaders into the sea and, holding the high ground overlooking the Allied positions, were able to subject the Allies to a devastating fire from well-sited guns. But the bridgeheads from Salerno to Agropoli held firm, while over more reinforcements in men and material poured into the beaches and also into more southerly ports, covered by naval and air forces. The enemy had the advantage in the air, for whereas the Allied fighter planes of the N.W. African Air Force had to fly from a great distance, the Ger. fighters could operate from near bases. Allied air forces, however, flew over 800 sorties on Sept. 13 to support the infantry and gunners who were fighting on the open crescent of the plain of Salerno without cover of vegetation or terrain against an enemy skilled in the defensive use of hills dominating almost every point of the bridgeheads. The fighting there now grew more intense than ever, and, to harass the Ger. reinforcements, the N.W. African Air Force on Sept. 14 made the most concentrated offensive until now of the whole Mediterranean war. Meanwhile the Eighth Army, having seized Bari, Canosa, and Belvedere, were making forced, if unopposed, marches to link up with the Fifth, from which they were now separated by 70 m. Throwing a powerful mobile force across the Apulian plain, they then captured the important air base of Foggia (Sept. 28), considerable casualties being inflicted on the Gers. In the advance, extensive demolitions had been carried out by the enemy at Foggia and, the Apulian aqueduct having been destroyed, the tn. was without water. At the same time Castellanovo was taken by the Fifth Army, whose tank spearheads were thrusting across the plain towards shattered Naples, while other forces were pressing on through difficult mountainous country N. of Salerno. The frenzy of Ger. demolitions in Naples and on the road to the city indicated that the Ger. commander, Kesselring, had no intention of defending it. It took the Fifth Army six days to pierce the

Ger. defensive ring in the wild mts. separating Naples Plain from the gulf of Salerno. Among the crags and along the valleys were fought some of the bitterest engagements of the war. Ger. rearguards had to be bayoneted, bombed and blasted from their strongpoints. Brit. troops played a great part in fighting a way through. Shortly afterwards the naval base at Castellammare 14 in. across the bay from Naples fell, and the whole Sorrento Peninsula was in Allied hands. Naples fell on Oct. 1 to Gen. Clark's army. Bombing and Ger. demolitions had left deep scars on the city. Most of the public buildings, factories, wharves, ware houses, and installations of military value had been destroyed, mainly by fire. Shops were empty, roads closed, and streets mined and demolished. As the Allies had long foreseen, the Gers. had evacuated the city in order to take up a very strong defensive position on the Volturno R., and on the line of that riv. bitter fighting lasted for some time. Meanwhile against growing resistance the Eighth Army pushed W. from Termoli on the Adriatic coast. The Fifth and Eighth Armies were now in contact with each other and the Allied line ran from Naples through Caserta, Campobasso, and S. Martino to Termoli. By capturing the tn. of Capua early in Oct. the Fifth Army at length won a bridgehead on the Volturno R. But though they advanced to the entire W. course of the riv. in a single day, progress in the difficult country of the Apennines was slow. Towards the end of the month there was a general advance on the whole of the Allied line except at its extremities. It was evident that the line from Vasto on the Adriatic to Mondragone on the Tyrrhenian sea, by way of Isernia and Venafro, would be strenuously defended by the enemy, for it represented the strongest position that could be held S. of Rome and all roads now led to the cap.

Isernia, a pivotal point in the Ger. defence and centre of their lateral communications, was captured by the Eighth Army on Nov. 4. The Gers. were also driven off Monte Massico in the S., the Allied armies making a substantial advance along the whole line from the Tyrrhenian coast to the knot of the Montagna di Matese in the centre of the Ger. line. Almost simultaneously the Eighth Army struck across the Fregio R. on the section of the front near the Adriatic coast, but there were strong prepared Ger. defences across the riv. 5 m. behind and much bitter fighting lay immediately ahead. Vasto, on the coast, was taken on Nov. 7 without a fight. Though unimportant as a harbour, it gave command of most of the road running S.W. to Castiglione. Meanwhile the Amer. Fifth Army had advanced past Venafro in the centre and, on the extreme left, their patrols crossed the Garigliano riv. (Casalbordino fell to the Eighth the next day but only after heavy fighting which, however, brought Montgomery's forces to the banks of the Sangro. Desperate Ger. counter attacks to drive the Amer. troops N. of Venafro into the Volturno valley failed. The capture of



Castiglione on Nov. 10 gave to the Eighth Army control of the whole road from Vasto to this important supply point in the Apennines. The flying of the swastika over the vil. of Castelforte, on the N. side of the now swollen Garigliano seemed more than anything a gesture of defiance; but it symbolised the Ger. command's long obvious determination to stand and fight along the magnificent defensive positions on which it had now been thrown back. This defensive line is not a single line nor yet even a series of lines; rather is it a mass of easily-defended hills or mts. 36 m. in depth. The Fifth Army was now only on the approaches of these positions. Savage counter attacks were launched to meet virtually every Allied improvement of position. It was evident to the Allied Command that, in view of the enemy's defensive strength, even local attacks and breaches might require long planning for what seemed to be disproportionate effort.

The Gers. were, in fact, well placed in Italy. They now had ten divs. on the central front facing the Fifth and Eighth Armies along the Garigliano-Sangro line, stretching across the narrowest part of Italy. Its centre, the central massif of the Apennines, is the highest and wildest country in the whole range. The Ger. hope was that, even if Montgomery broke the Sangro line and threatened Rome from the N.E., they could at least hold him for a time in the mts. between the two fronts. Altogether the Gers. now had at this time (Nov. 19) nearly fifty divs. in Italy and the Balkans, an increase of from 10 to 15 divs. in the past month and obvious evidence of their realisation of the Allied threat to the whole S. and S.E. of Europe.

On Nov. 29 Gen. Montgomery, after a period of heavy rain and bogged conditions, began a new offensive across the Sangro, his attack being preceded by a demolishing air and artillery bombardment. Allied mastery of the air was so complete that in its initial attack the Eighth Army succeeded in gaining positions along the outer edge of the Gers.' winter defence line. Brit., Indian, and New Zealand troops made determined attacks, the enemy resisting with successive counter attacks supported with tanks including flame-throwing tanks. The sternest fighting was around the vil. of Mozzagrona and Santa Maria, which are 4 m. from the sea, and also in the Archi area where a second bridgehead was established. On Dec. 1 the Eighth Army made a general advance along its whole right flank and shattered the most important part of the Gers.' winter line in Italy. Lanciano, Castel di Frontano, and Casoli, on the lateral road from the Adriatic to the centre of Italy had now fallen to Montgomery, whose advance was aided by the Tactical Air Force's devastating assault on Ger. positions and transport and their close support of the attacking troops. The Gers. were now falling back in the Sangro sector, but the pursuit was hampered by the bad weather. Large quantities of guns and equipment were

abandoned by the enemy, who had suffered severe casualties and was now rushing up reinforcements from N. Italy. In the ensuing days, in the W., Gen. Clark's Amer. and Brit. Forces, in a desperate struggle in rainy weather and across country which remains flooded and waterlogged long after the rains cease, slowly but surely drove the enemy from his strongly fortified positions on and around Monte Maggiore and Monte Camino. But the Gers. fought grimly to defend their vital defences along the road to Rome. Hills, valleys, and ravines were defended with all the devices of mines and entanglements calculated to delay advancing troops, while deep in the mt. slopes gun emplacements were hewn out of the rock to a depth of 8 ft. or more. Transport was so difficult and troops in such inaccessible places that supplies had to be dropped to them from the air. In the E. the Eighth Army, despite a deluge of rain, crossed the Moro R., Canadian troops securing positions N. of it, including Ortona.

Thereafter, for five weeks, there were no marked changes in the respective positions of the opposed forces. But on Jan. 18, Brit. troops of the Fifth Army eventually crossed the Garigliano in the Tyrrhenian coastal strip in face of fierce yet ineffective Ger. resistance. On the next day very hard fighting developed particularly round Minturno, Castelforte, and Subiaco. Hard also was the struggle on the high ground covering the Appian Way where it runs by the sea towards Formia and Gaeta. The destruction of bridges and the sowing of innumerable landmines hampered progress. In the attack on a 7-m. front from Minturno and Castelforte cruisers and destroyers of the Royal Navy bombarded shore positions in the gulf of Gaeta. Initially successful sea-borne landings were made on Jan. 22 by Fifth Army troops S. of Rome near Nettuno and Anzio only 32 m. from Rome, the troops advancing well inland before meeting any resistance. The Gers., far from expecting such a move, had sent strong reinforcements, including their best motorised Panzer Grenadier divs. from the Rome area, S. to the Fifth Army front, where by then they were believed to have 100,000 men. The new Brit. landings were covered at sea by naval forces—Brit., Amer., Gk., Dutch, and Fr. under the command of Adm. Lowry of the U.S. Navy, Adm. Troubridge of the Royal Navy commanding the forces which landed the Brit. troops. The simultaneous Allied air offensive was directed against the ring of airfields round Rome and then on rail and road communications radiating northwards from the cap. These attacks by Flying Fortresses, Liberators, and R.A.F. Wellingtons ranged along every railway artery in the triangle formed by Rome, Pisa, and Florence. Other targets were Civita Vecchia, the nearest port N. of Rome, and a villa near Frascati (15 m. S. of Rome) which was known to be the carefully-concealed headquarters of Oberkommando Sudwest, the U.S. 12th Air Force scoring twenty-six

hits on the villa. Along the Garigliano valley advancing Brit forces repulsed heavy Ger counterattacks between Castel forte and Minturno (Jan 22). Even by the 25th no effective resistance to the landings had been met and still more troops and supplies poured into Nettuno. But to the S the Gers launched still more violent counter attacks against the 15th Army's main front in the Garigliano and Rapido R's area, most of these onslaughts being hurled back with heavy loss to the

found time to concentrate a powerful army in the Alban hills overlooking the beach-head, bringing substantial reinforcements from great distances. An Allied advance across the Apennine Way met with stiff resistance and on Feb 3 the Gers opened their first major attack on the beach head. This was sustained with varying intensity for more than a week and although it was eventually fought to a halt, it had succeeded in establishing a firm investment of the Allied positions. About Feb. 12



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ANZIO MEN OF THE 2ND INFANTRY BRIGADE LEAVING LANDING CRAFT, JANUARY 22 1944

enemy particularly around Minturno. There were also violent struggles for the commanding position of Monte Croce N of the important and hotly contested town of Cassino. By Jan 29 the Amer forces had crossed the Rapido.

After the Anzio Nettuno landing had been successfully made, it seemed that sea power despite the loss of two cruisers and two landing craft, had intervened with decisive effect to turn the flank of the Ger position on the Cassino front and cut the lines of communication to Rome. When, therefore, in the first few days hardly any opposition was met, it seemed possible that the Ger. commander, Kesselring, must begin a general withdrawal. Gen. Alexander, however, found it necessary first to consolidate his position on shore but, before he could do so, the Gers. had

the initiative passed for a brief space to the Allies when Brit troops advanced near Cassino but four days later Kesselring resumed the assault with a furious attack on a narrow front along the Anzio Albano road. Deep penetrations were made in the Allies position, but after some days of exceptionally bitter fighting this second Ger attack also commenced to falter. The heavy guns of the Allied fleet intervened with powerful support and as the tide of assault began to turn, the bombers of the 15th Army concentrated their weight against the flapping Ger attack and by Feb 22 it was evident that this attack too had spent its strength. In the ensuing week of bad weather Kesselring regrouped his divisions and prepared to deliver his third attack. This was shorter than either of the first two

but it exceeded both in intensity. It was delivered early on the 29th, Kesselring's tactics on this occasion being to concentrate a great weight of attack upon a very narrow front, while trying to contain the Allied forces holding other sections of the perimeter by subsidiary or local operations. The main blow was delivered with three divs. against a sector of no more than a thousand yards on the Carroccio side of Cisterna, the aim apparently being to strike at the hinge between the Brit. and Amer. forces. It fell, however, directly on the Third Amer. Infantry Div., which included some of the most seasoned troops the United States had in the Mediterranean area. The Amers. were forced to yield some ground before the impact of so tremendous a weight of men and armour, but their counter-attack was soon launched and by the next day they had regained all the ground won by the Gers. Meanwhile the line as a whole had held at the other points attacked so that by March 1 the Gers. were everywhere back at their starting-points, having inflicted heavy casualties, but having themselves suffered much more severe losses.

*General Alexander's Attack on the 'Gustav' and 'Hitler' Lines—Capture of Rome.*—On the night of May 11-12 Gen. Alexander launched a new offensive on the grand scale. This offensive was really the opening of the general assault on Hitler's fortress of Europe, it being the Allies' intention to invade France within a month and Stalin's to attack along the entire E. front almost at the same time, so as to embarrass the Ger. High Command with simultaneous offensives in the W., S., and E. Alexander's offensive was delivered after an intricate regrouping of armies, the main weight of the Eighth having been brought across to the W. side while the reconstituted Royal It. Army (Corpo Italiano di Liberazione) took over the Adriatic sector. Having crossed the Rs. Rapido and Garigliano, where these formed part of the Ger. 'Gustav' Line, the Allied forces were soon assaulting the whole line with irresistible force. In their victorious advance they were given tremendous air support. Heavy bombers, too, made a huge gap in the Aviano viaduct, thus stopping the movement of supplies through the Brenner Pass. Fr. forces—mainly Goums and other colonial troops accustomed to mountainous country—made a spectacular advance on Ansonia and the vicinity. Moving with incredible speed across many miles of difficult mt. terrain they captured Monte Majò, opened a dangerous breach in the Gustav Line, and disorganised the whole system of defences in this part of the enemy's line. The Fr. were helped by a corresponding Amer. advance to the S. Meanwhile Brit. forces were advancing through the mouth of the Liri valley and threatening the Via Cassilina and the Cassino position, while Polish troops had secured dominating positions N.W. of the Abbey (Monte Cassino). San Giorgio was carried by storm. Meanwhile the Amers. were pushing ever further along the Applan Way and the W. coast. At the same time,

with the capture of Pignatario by Indian troops of the Eighth Army, a substantial bridgehead was estab. on the N. bank of the Liri and the Ger. grip on Cassino, the Via Cassilina and the Abbey was relaxing. Cassino tn. eventually fell on May 18 to Brit. troops and the Abbey was captured by the Poles. (For an account of the protracted struggle for Cassino, Feb.-May, 1944, see *CASSINO, BATTLE OF*). With the fall of these famous positions the Gustav-Line S. of the Apennines had ceased to exist, and the victorious allies were everywhere advancing on the outposts of the 'Adolf Hitler' Line—the name of these rearward positions being some indication of their importance in the eyes of the Ger. Command. Farther S. the Fr. captured Esperia and the Amers., who had seized Formia, were now overrunning the Gaeta peninsula. So far some two fifths of the Ger. Tenth Army, which was holding the main front, had been almost destroyed. The Aquino-Pontecorvo position was now the lynchpin of Kesselring's defences, for it was the centre of vital road communications, which, if lost, would mean that the Allies might turn the whole N. part of the Hitler Line. Hence Ger. resistance now stiffened considerably and there were counter-attacks against both the Brit. and the Fr. tact. local reserves were thrown in an effort to save the situation, which, however, still further deteriorated with the loss of more high ground N.W. of Pico.

A new and dramatic turn was now given to the campaign by the sudden launching of a strong offensive by the Anglo-Amer. forces of the more or less dormant Anzio beachhead. This was in fact the second phase of Gen. Alexander's general offensive. The struggle now grew most intense: Fr., Polish, and Brit. troops were wrestling successfully with the dense and intricate Ger. defences of the Liri Valley centred on Pontecorvo and facing repeated and desperate counter-attacks, while the Amers., meeting with slighter resistance, were overrunning the trackless mass of the Volscian mts. to the S. Near Borgo Grappa, on the coastal highway between Terracina and Anzio, the beachhead forces at length linked up with the main Fifth Army front, so that a single Allied front now stretched right across Italy, separated from Rome by only 25 m. The whole of the Applan Way was now in the hands of the Allies. Allied tanks, supported by infantry, soon wiped out the last Ger. resistance in the centre of the heavily damaged tn. of Cisterna, and Brit. troops broke through the defences about the railway station on May 25. All that day a house-to-house battle was fought among the crumbled ruins of the tn. On the same day that Cisterna fell Pontecorvo was taken by Canadian armoured cars. That memorable day saw the whole original Ger. defence line shattered. Allied tanks were now massing with other strong concentrations in the coastal plain for a powerful thrust from the Applan Way to Highway Six (Via Cassilina), Kesselring's supply route. All through this day tanks and infantry

poured through the gap in the Hitler Line near Pontecorvo, forcing the enemy to evacuate the tn. and to swing back their line pivoting on the Aquino defences so that it now ran insecurely E. and W. on the S. side of Highway Six. The Ger. hold on the Via Cassilina was now so precarious that the withdrawal of their divs. from the Liri Valley was made due northwards instead of in the direction of Rome. Kesselring's forces were virtually split in two, one body retiring into the Apennines, the other into the Alban Hills, which latter constituted the last naturally defensible positions protecting the cap. from the S. Over 10,000 prisoners had now fallen to Gen. Alexander. Yet the Gers. continued to make a stout, if ill-organised, resistance. Kesselring, in the endeavour to retain Rome, staked everything on the defence of the strongholds of Velletri and Valmontone, the two bastions of the Alban Hills. The last battle for Rome now began. Fierce fighting raged in the Alban foothills, with desperate counter attacks by the Hermann Goering Div., which now re-appeared and temporarily checked the Amers. S. of Campo Leone the Brit. forces made a substantial advance. N.W. of Cassino New Zealanders were pressing onward to the important stronghold of Avezzano, through which ran Kesselring's vital escape route. Velletri was surrounded by June 2 after the Amers. had taken Monte Artemisio. Velletri and Valmontone fell to the Fifth Army that day and the fall of Rome was imminent. This outstanding and significant success in the Alban Hills was achieved after only a week of bitter struggle in which Ger. resistance grew more intense each day, the vineyards of Velletri being packed with Ger. snipers. Velletri suffered tragically in the encounter, and viewed from the Applan Way, which skirts the tn. on the W. side, it seemed as if not a single house had escaped damage.

The Fifth Army entered Rome on June 4, after some heavy fighting in the outskirts. The Gers. did little damage to the city, partly because their retreat was too precipitate and partly because Kesselring accepted proposals by the Vatican to declare Rome an open city. The main objective of Gen. Alexander was, however, not the occupation of Rome; it was the destruction of the Ger. armies. Leading elements of the Fifth Army passed through Rome on June 5 and crossed the Tiber. The wreckage of Ger. vehicles littered the road for 80 m. N. of Rome. Hundreds of heavy bombers joined the fighter-bombers in continuous attacks on the retreating enemy. Eighth Army infantry and tanks advanced along the whole line of attack. The total of prisoners had now risen to 26,000. Civita Vecchia, the naval base 40 m. N.W. of Rome, fell on June 7, Viterbo and Tarrquinia on the 9th. Further and further the Gers. were being forced back E. of the Tiber. The advance on the right was slower but the terrain was much more mountainous; but by the capture of Avezzano the Eighth Army gained control of the central Apennine sector while

on the coast Indian troops entered Pescara, the sluice gates of which had been destroyed by Allied bombers some weeks previously. Kesselring's line was now moving back across the whole width of Italy, swiftly in the W., slowly and steadily in the centre, and rapidly on the Adriatic.

After troops of the Seventh Indian Div. had crossed the Pescara and the tn. of Pescara had fallen resistance on the Adriatic coastal sector grew less stiff; there was, however, greater resistance in the W. especially at Grosseto and in the centre around Terni. By now Ger. strength in Italy had been halved by Gen. Alexander's offensive. But Kesselring still had the equivalent of twelve and a half divs. left to fight, three of them fresh including the Fourth Parachute Div. About 70,000 men or the remains of eight and a half divs. were now (June 23) deployed on a line across Italy which ran through Chieti, S. of Lake Trasimeno, N. of Perugia and to the Adriatic about 30 m. S. of Ancona. Heavy rains had given the Gers. a respite and enabled them to recover equilibrium. Eighth Army forces on each side of Perugia were engaged in very heavy fighting and it was apparent that the Gers. had no intention of withdrawing from their strong positions between Lakes Trasimeno and Chiusi without an attack in force.

A Fr. force landed on Elba on June 18 and, with the support of allied aircraft and ships, soon occupied a large part of the is., which was important to the Gers. as a submarine base. The chief obstacles to the landings was in the Golfo di Campo on the S. coast from powerful batteries on the Capo d'Enfola. They were strongly sited on granite heights but were put out of action by bombing attacks. By noon on the next day resistance ceased with the capture of Portoferraio, the remainder of the garrison, numbering nearly 2000 Gers. being captured.

*The Allied Advance to the 'Gothic Line.'*—The advance of the Allies to the so-called 'Gothic Line' involved sharp fighting in difficult mt. country, but by early July the Eighth Army had broken through the Ger. defences to the W. of Lake Trasimeno and in the direction of Arezzo, 20 m. N. of the lake. The Gothic line ran from Pisa on the Tyrrhenian coast to Rimini on the Adriatic; it had been powerfully fortified for a year past because it was the penultimate line of natural defence before the valley of the Po and, if the Allies broke it, Kesselring's only remaining substantial line was the curve of the Apennines E.S.E. of Genoa. The Fr. corps now took Siena, an ancient city which was an important point on the W. approach, by the Via Cassia, to the Gothic line. A fortnight later Polish troops took Ancona and the Amers. entered Leghorn where the port installations were found to have been destroyed. The capture of Ancona was a swift exploit helped by Polish tanks, and over 2000 prisoners were taken. The enemy, however, maintained a very stubborn defence along the high ground facing the Eighth Army in front of Florence, the outskirts of which great city the

Eighth reached soon after the capture of Arezzo. By the end of the first week of Aug. Brit. troops held that part of Florence which lies S. of the Arno, but great care was taken in their use of heavy weapons to avoid damaging historic buildings, and this retarded progress. The Gers., however, soon abandoned their loudly-proclaimed pretence of keeping Florence an open tin, and already all the bridges across the riv. except the Pontevecchio were wrecked by the Fourth Parachute Div. At the end of Aug., however, the Gers. had been forced back into the Gothic line and Polish troops were in Pesaro on the Adriatic and engaged in bitter fighting against the Ger. First Parachute Div. Eighth Army infantry and tanks had now crossed the R. Foglia and were strongly attacking the Gothic line. The campaign entered a new and significant phase in the opening days of Sept. with the Gothic line broken along a 20 m. front in the Adriatic sector, a general advance of the Eighth Army's front, the capture of Pisa, and an advance by the Fifth Army across the Arno. The breaching of the Gothic line by the troops of the Eighth Army was an outstandingly decisive victory for allied arms, in which Brit., Canadian, Polish, It., and Indian troops had all taken part since the attack was launched on Aug. 26, for the 20 m. stretch of that line from Pesaro inland was the most trusted Ger. defence work outside Germany itself and was intended to form one of the main buttresses of Hitler's fortress of Europe.

*The capture of Rimini—The Gothic Line overcome.*—Rimini, E. pivot of Kesselring's position, fell to the Eighth Army on Sept. 22 after one of the stiffest battles that Army had had to fight in the course of its long advance from Egypt. The battle of the Gothic Line and of the Apennines ended when First Gk. Mt. Brigade and Canadian tanks captured the deserted and auct. city of Ravenna, while the Brit. and Empire forces further inland were driving over the last foothills of the Apennines to reach the Marecchia R., which runs from Arezzo to Rimini, and thereby to render the city untenable. In front of the Allies now lay the Lombardy Plain, with the Po valley stretching out beyond. The Eighth Army were now within striking distance of the Via Emilia, historic road along the Po valley to Bologna and Piacenza. In these operations two Ger. divs. had lost most of their effective strength, while losses far heavier than those they had suffered at Cassino had been inflicted on the First and Fourth Parachute and four other divs., including the crack Twenty-Sixth Panzer Div.

Ten days relentless attack against the Gothic Line defences in the central sector had left those defences a shattered mass of rubble and battered fortifications. The Gothic Line could have been the most formidable artificial defensive system the Brit. had so far encountered. But its defects were that it was overlooked from the S. and lacked depth. Moreover, many individual works were badly sited and their construction incomplete or

shoddy, perhaps the deliberate sabotage of It. contractors. The fiercest struggle in the battle for the Gothic Line was for the high ground which commanded the Rimini gap: while the fighting for Gemmano, Croce, Sansovino, and Coriano proved to be some of the bloodiest in the hist. of the Brit. Army. Ger. reinforcements to the extent of five divs. were rushed up in the hope of saving the Gothic Line. Gemmano changed hands ten times. Then Gen. Leese, commanding the Eighth Army, pushed the Canadian corps into the gap between the sea and hills without waiting for the hills to be cleared. The experiment succeeded. While the Canadians drove on to capture San Fortunato ridge overlooking Rimini and the Marecchia valley, the sorely-tried Brit. Home line regiments, in a magnificent riposte, carried Croce and Monte Colombo. The Ger. abandoned most of their prepared positions and retired to the N. slopes of the Apennines, where they were well served by the numerous roads of the Po valley, leaving the Allies to maintain forward communication through the rough trails over the mts. The Ger. left flank was covered by a great depth of defensible riv. lines.

*Ravenna and Faenza captured by Allies*—*Savio, Senio, and Santerno rivers crossed.* After this series of successes there followed a long lull, broken a month later when the Eighth Army advanced between the Via Emilia and the coast, driving the Gers. back to the Savio R. Six weeks later Ravenna was entered by the Eighth, the city being outflanked by a Canadian unit, Princess Louise's Dragoon Guards, in a brilliant encircling movement which forced the Gers. to withdraw to avoid being trapped. Then twelve days later, on Dec. 17, after highly effective operations in which Gen. Freyberg's New Zealanders played the chief part, the Eighth Army captured Faenza and carried the allied line nearer Bologna. But the lull was resumed and four months elapsed before the Allies struck again in Italy, though in the meantime they rendered valuable service in holding down twenty-five well-equipped Ger. divs. at a time when the Allies were carrying out their great attacks on the W. and E. Fronts. From the Allied viewpoint the main difficulty in Italy lay in the nature of the country. The Fifth and Eighth Armies had advanced northwards over mts., across rivs., and through defiles in terrain peculiarly adapted for defence, and they had never at any time had a sufficient superiority in numbers and equipment to enable them to achieve a decisive success. For, as the demands of other fronts grew, the It. theatre of war had to take a subordinate place and for about four months, owing to wintry conditions, it had been quiescent. The co-ordinated attack on Germany from the S. may be said to have begun on April 10, 1945, with the opening of the allied offensive on the It. Front to compass the destruction of the Ger. Army of the Po and drive it away from the industrial area of N. Italy, and eventually to

link up with the Allies in Yugoslavia and Austria.

The Senio R. was crossed on a wide front in the vicinity of Lugo, N. of the Rimini Bologna highway. A day later troops of the Eighth Army, now under Lt Gen McCreery, were across the R. Santerno in strength and at once encountered strong resistance. Other troops landed from Lake Comacchio in the rear of the enemy positions.

*The final Allied offensive launched—Fall of Bologna and Modena—Po crossed.*

Castel san Pietro, on the Via Emilia, was strongly defended but Brit troops entered the town on April 17 and pushed on N.W. towards Bologna, bypassing Argenta. Next day the Argenta gap providing the sole practicable route for mobile forces W. of Lake Comacchio, was brought under Brit control with the capture of Argenta on the evening of April 18 and the advance of the Brit. troops towards Bocca Leonc and Ferrara. From Locatone to Lake Comacchio the Gers had their last and toughest defence line, a continuation



Canadian Army Photo

A CANADIAN SKI TRAIN IN THE ITALIAN MOUNTAINS

—The Allied offensive was soon extended to the Fifth Army under Gen Mark Clark N. of Bologna. His attack like that of the Eighth Army, was preceded by air blows on a formidable scale by both strategic and tactical air forces. The offensive was led by the Tenth Amer Mt Div which was fresh and well equipped for its arduous task of overcoming this rugged Apennine sector. The Eighth had now crossed the Sillaro R. which runs parallel with the Santerno bridgeheads being won on both sides of the Ravenna Bologna road. The Gers brought up reinforcements and there was heavy fighting at Bastia, a key position on the Ravenna Ferrara road. They made desperate efforts to hold the vital Argenta gap but the Brit forces pressed on and established another bridgehead across the Sillaro. Huge allied bombing raids were made on a score of targets S. of Bologna in support of both the Fifth and Eighth armies.

of the vain gloriously named 'Gonzghis Khan' line along the R. Idice designed to cover the approaches to the Po. But already the Eighth Army had shown superb skill in crossing rivers held by some of the best troops in the Wehrmacht in formidable natural positions strengthened during the winter months with all the ingenuity and thoroughness of the Ger. High Command. Following a week of heavy fighting through mountainous country S.W. of Bologna Amer troops entered the Po Valley W. of Bologna on April 20 cutting the Via Emilia between Bologna and Modena. Bologna fell to S. Africans of the Fifth and Poles of the Eighth Armies on April 21, Amer forces advancing 20 m. beyond in pursuit of disorganised Ger formations. Bologna was the first great objective of the Allied spring offensive. Thus the Allies now stood inside the gateway to the Po plain. With Fifth Army troops closing on Modena and those of the Eighth

closer to Ferrara the full power of the Mediterranean Allied Tactical Air Force was turned on the Gers, penetrating across the Po valley, with devastating effect, and on April 21 the Allied armies reached the Po. A ceaseless attack was maintained throughout the night against enemy columns on the roads and against ferry and pontoon crossings of the Po from Mantua eastward to the Adriatic. Allied air forces sustained the attack through the following day. Bridges across the Adige S. L. of Verona and at Idria were bombed and trucks and locomotives destroyed. Next day there were important developments. Allied troops stormed across the Po less than twenty-four hours after they had reached the river (April 24). At the same time three great cities of N. Italy fell to them. Spina, important naval base on the gulf of Genoa, Modena, a big communication centre 23 m. N.W. of Bologna, and Ferrara, another communication point 3 m. S. of the Po. Already over 40,000 prisoners had been taken by the two armies.

**Americans capture Verona and Genoa.**—With the Amers well across the Po the Gers became thoroughly disorganized and their resistance collapsed. The road from Bologna to Verona passed through a flourishing countryside almost unscathed by war. The almost complete absence of blown bridges across the Po and of shell-riven buildings showed how precipitate had been the Ger retreat. Bridging the Po by pontoons was a laborious task, owing to the steepness of the bank and the delay involved in dragging heavy pontoons across the Apennines. Verona fell on April 26 to the Amers, who then crossed the Adige near the city. It was in a pitiable state, one third of its buildings being destroyed or damaged by allied bombing, and more wrecked when the Gers blew up all seven bridges over the Adige before the Amers reached it. Genoa was occupied by Amer Nisei troops on April 27. It partisans having previously seized control of a large part of the city and facilitated the entry of the troops. The patriots in fact now controlled much of N. Italy. Amer armour advancing along the Via Emilia from Parma captured Piacenza midway between Parma and Milan.

**Milan entered—Mussolini executed by Italian partisans.**—At Lecco, in the hills above Como, Mussolini was arrested on the same day by customs guards while he was trying to escape into Switzerland. Next day the ex-Duce and twelve members of his Fascist cabinet were executed by It. partisans, who carried their bodies to Milan for public display just before the Fifth Army entered the city (April 29). The bodies of the executed fascists were exposed in a square where fifteen partisans had been shot a year previously.

**London troops in Venice.**—14th Army across the Adige near Padua.—Troops of the 56th (London) Div entered Venice on the evening of April 29. The Allied advance now swept rapidly across the N. of Italy liberating Bergamo, Brescia, Vicenza and Padua, while, as mentioned above,

the Amers entered Milan. In this swift movement the Fifth and Eighth Armies drove through the enemy's strong defensive Adige line forcing the Gers back to the S. side of the Brenta. A whole Ger. infantry div surrendered to the Brazilian expeditionary force. Negotiations were now in progress for the surrender of the Ligurian army commanded by Marshal Graziani, who was now a prisoner in allied hands. Eighth Army forces near Idria crossed the Adige in face of great difficulties, the crossing being a major engineering feat on account of the fast flowing and swollen current of the river and the destruction of all bridges.

**German armies disorganised—Lurin entered.**—By the end of April the liberation of all Italy was nearing completion. The Ger armies were so broken and disorganised that they had virtually ceased to exist as military forces. This destruction had all been accomplished in an offensive lasting only twenty days for the Eighth and fifteen days for most of the Fifth Army. Twenty-five Ger divs, some of which had been torn to pieces and were no longer able to resist the Allies. Thousands of vehicles, tremendous quantities of arms and equipment and over 120,000 prisoners had been captured. The military power of Germany in Italy had practically ceased even though scattered fighting might continue as remnants of the retreating enemy were mopped up.

Lurin was entered by Amer in entry on April 30 having been captured a short while previously by It. partisans. On the other side of N. Italy Treviso was taken by the 5th S. African armoured div. New Zealand troops crossed the Piave and the 6th C. column which was advancing on Idria from the S.E. after the city had been captured was intercepted and broken up with the loss of many prisoners. Troops of the 10th Amer mt. div crossed the Adige in assault boats and captured Mussolini's villa at Garzanti. Other Amers seized crossings over the Tizno and advanced across the Brenta. Marshal Tito's Yugoslav troops broke into Trieste and were fighting in the area of Trieste. Troops of the 2nd New Zealand Div, after crossing the R. Isonzo, reached Montebelluna and made contact with forces of Marshal Tito's Yugoslav Army (May 1). The Sixth Brit. Armoured Div entered Trieste on the same day. Other Eighth Army troops passed through Vittorio Veneto, scene of a great Allied victory in the first World War and reached Belluno. The Fifth Army continued to advance along the gulf of Genoa and occupied Savona.

**Italian partisans in control of northern industrial region.**—The efforts of It. partisan forces, which, in Lurin and Milan, did not wait to be liberated but struck timely and powerful blows against the Nazi and fascist forces, greatly contributed to the enemy's defeat and disorganisation. The liberation of Milan by the combined efforts of the Committee of National Liberation and partisans represented the culminating effort of the resistance move-

ment, which during the previous year had been organised to a high degree of efficiency; and what happened in Milan and Turin happened also in Genoa and in nearly all the big cities of Lombardy and Piedmont. The result was that the greater part of the industrial equipment of N. Italy—factories, foundries, power stations, and hydro-electric plants—were preserved intact in so far as it was undamaged by allied bombing. In the case of Milan abortive negotiations had been in progress for two months between the Committee of Liberation and the Ger. and Fascist authorities, with the object of ensuring that the Gers. should not wreck factories when they withdrew. Hence, when the Fifth Army crossed the Po, the Committee decided that the time had come to put into action plans prepared for a general insurrection, with the object of seizing control before any harm could be done. The Gers. had no fighting troops in Milan at this time, and the Fascist militia of 100,000 men were unreliable and soon yielded to the partisans. Sporadic fighting continued for a short time but soon the committee of liberation was in control and had taken over the administration of the city.

These events were the prelude to the total collapse of Ger. and Fascist resistance in Italy and their unconditional surrender to Field Marshal Alexander.

*Unconditional surrender of German and Fascist Armies.*—Long negotiations preceded the unconditional surrender of the Ger. and Fascist forces in Italy. They actually began as early as Feb. and most of what took place was without the knowledge of either Hitler or Himmler. The allied offensive, which began on April 9, was not affected by these negotiations, but doubtless in its turn it expedited the decision finally taken by the Gers. to surrender. On March 19 there was a conference near Locarno in Switzerland between two representatives of Sir Harold Alexander's staff and Gen. Karl Wolff, senior J.S. officer of the Ger. forces in N. Italy, at which the Allied officers told the Ger. general that Field-Marshal Alexander was interested only in getting authorised Ger. representatives to Caserta to accept unconditional surrender. Eventually, on April 27, Wolff and two Ger. plenipotentiaries arrived in Switzerland and were brought by allied aircraft to Caserta next day. On the morning of April 29 the Gers. were told that either they must surrender unconditionally or the negotiations, which had been begun the previous day, would end without further delay. The Gers. then accepted the Allied terms for the surrender of their entire forces under Col. Gen. von Vietinghoff-Scheel's command to Field-Marshal Alexander, Allied Supreme Commander, Mediterranean. The instrument of surrender was signed in Caserta Palace, near Naples on April 29, the terms to be effective from noon, May 2. The ter. of the Ger. 'South-West Command' included all N. Italy to the Isonzo R. in the N.E. and the Austrian provs. of Vorarlberg, Tirol, and Salzburg, and portions

of Carinthia and Styria. The enemy's total forces surrendered numbered over 900,000, the combatant troops of which included the remnants of twenty-two Ger. and six It. Fascist divs. The terms involved the unconditional surrender by the Ger. commander of all forces under his command or control on land, sea, or in the air and the immediate immobilisation and disarmament of enemy forces. It was also provided that the instrument would be superseded by any general instrument of surrender imposed by the United Nations and applicable to Germany and the Ger. armed forces as a whole. The surrender of so much ter., which allowed the Allies to advance without opposition to within 10 m. of Berchtesgaden, hopelessly compromised the so-called 'southern-doubt' founded on Bavaria, to which the Gers. on the W. and E. Fronts intended to fall back after their forces had been split in two by the junction of the W. Allies and the Russians on the Elbe (see also WESTERN FRONT IN THE SECOND WORLD WAR). The total number of Ger. prisoners taken by the Allies on the It. front before the end of hostilities was 230,000.

The New Zealand Div. occupied Trieste on May 2, Gen. Freyberg accepting the surrender of the Ger. garrison. New Zealand forces also occupied Gorizia. The presence of Tito's and other Yugoslav troops in part of Trieste and elsewhere within Italy's E. borders was, however, provocative of awkward territorial and political questions. Troops of the Eighth Army on May 7 crossed the It. frontier into Austria at a point N. of Udine. This movement of the Eighth Army was now linked up along almost its entire course from N. to S. with the line of the Russians' movement to the W. By the creation of this line a boundary was set up which marked the limit of Brit and Russian operations. This line ran from Liezen, half way between Klagenfurt and Linz, through Judenburg, Koflach, 15 m. W. of Graz, and thence due S. to the Yugoslav frontier. See G. Carr, *Today—Italy the Target*, 1943; W. B. Kennedy-Shaw, *Long Range Desert Group*, 1943; C. Buckley *Road to Rome*, 1945; A. Moorehead, *Elbows*, 1945; H.M.S.O., *The Report by the Supreme Allied Commander, Mediterranean, to the Combined Chiefs of Staff on the Italian Campaign*, 1948.

Italian Greyhound, see GREYHOUND.

Italian Music, see ITALY, Music.

Italic Dialects, see LATIN LANGUAGE.

Italics, letters of It. origin, said to have been an imitation of the hand-writing of Petrarch. They were introduced by Aldus Manutius of Venice in the sixteenth century for the purpose of printing his projected small ed. of the classics. The cutting was entrusted to Francesco de Bologna. The caps were square Rom. letters, but the small letters, sloping to the right, were designed to imitate hand-writing, even containing a large number of tied letters. Although i. are not joined to each other in modern printing, the ligatures or connecting lines at the beginning and end of each letter are a prominent feature. They were introduced into



England in 1524, and are used to distinguish words, sentences, or sometimes such portions as introductions and prefaces which do not properly belong to the work. They are generally used for unassimilated foreign words occurring in Eng. text, for quotations, and for words requiring special emphasis.

**Italo-Abyssinian War (1935-36).** This conflict arose out of what was known as the Wal-Wal incident. A dispute between Ethiopians and Its. over the ownership of scattered wells in a sandy desert had led to fighting between It. and Abyssinian forces on Dec. 5, 1934 - but, in its wider implications it was, or became, the focus of the international relations of the greater part of the world and, indeed, it would not be untrue to say that it was the virtual beginning of the Second World War in 1939.

It. claims to spheres of influence in Abyssinia, first made towards the close of the previous century, were nullified by Gen. Baratieri's signal defeat at Adowa (Adua) in 1896 at the hands of the Amharans, which resulted in a treaty signed at Addis Ababa recognising Abyssinian independence. This disaster always rankled in It., and one of Mussolini's motives in going to war was that of revenge as well as to outshine the glory and complete the work of the Risorgimento. An Anglo-It. accord of 1891 had recognised the It. zone of influence over almost all modern Abyssinia, but this and later agreements and treaties were superseded by still later agreements, and the whole position was governed by a tripartite treaty between Great Britain, France, and Italy (1906), the terms of which were largely determined by the Italo-Ethiopian Treaty of 1896 (see ABYSSINIA). But despite this settlement, It. foreign ministers had always schemed for the recovery of It. influence, and these aspirations naturally grew more marked after the conquest of Tripolitania and Libya, thus holding out the hope of a vast It. empire in N. Africa. Abyssinia, however, confirmed her independence by being admitted, with the strong support of Italy, a member of the League of Nations, whereby it became the duty of the League to assist the Ethiopian Gov. so that it might develop the country's economic resources and improve the social welfare of its people. In 1935, however, Mussolini charged the Ethiopian Gov. with failing to fulfil its special obligations as a League member, particularly in respect of arms traffic and slavery, and, indeed, he made no secret of his intention to invade the country. The League endeavoured to stay his hand by setting up a committee to consider how to promote assistance for Abyssinia so as to secure administrative reform and economic development. The It. Memorandum of Sept. 22, 1935, in reply, called attention to the internal conditions of Ethiopia, and demonstrated the existence of an essential distinction between the countries of the east. Amharic stock and the outlying recently-conquered areas, averring that the Ethiopian rulers had so exploited these areas for their slave trade that they

presented an urgent case for It. intervention and that, in any case, the authority of the Negus (Emperor) did not extend to such areas. The Committee then proposed certain territorial adjustments in Abyssinia in favour of Italy in the vicinity of the Somaliland coast, Britain offering Zeilah (a port in Brit. Somaliland) to Abyssinia by way of compensation. But the It. Gov. rejected these overtures and contended that Abyssinia was incapable of respecting international agreements of any kind. It was now too late to stop the It. invasion, but the League, faced with the necessity of implementing the much-advertised Covenant (see COVENANT OF THE LEAGUE OF NATIONS) now proposed to put economic sanctions into operation against Italy as an aggressor State, and restrictions on trade with Italy were enforced six weeks after the invasion began. This naturally only served hopelessly to embitter Anglo-It. and Anglo-Fr. relations with out producing the desired result, and the next diplomatic move was the morally still worse Laval-Hoare plan for 'exchange' of ter., which, in reality, was a one-sided transaction whereby Abyssinia was being called upon to make the sacrifices and Italy invited to do the taking, and which contained an equally one-sided proposal for a 'zone of economic expansion and settlement.' The League rejected the plan, and the question which now came before it was that of oil sanctions, a drastic step which Mussolini said Italy would regard as an unfriendly act. The situation seemed the more grave from the very fact that the Brit. fleet in the Mediterranean and the forces in Egypt had been greatly augmented, while the Fr. Gov. had agreed, in the event of an It. attack on the Brit. fleet, to co-operate in resistance; but in fact Britain was not in a position to enter on a major war. 'Collective action' was on its trial, but no prominent member of the League was anxious to make the first move, especially as the U.S. gov. declined to take any part in the move. Moreover tension in Europe generally increased by reason of Hitler's denunciation of the Locarno treaties (q.v.), a factor which, it was feared would have repercussions on the Abyssinian war, Italy being a guarantor under those treaties. Peace feelers were now thrown out by the League, to which Italy returned an evasive reply, while Marshal Badoglio intensified his efforts to crush the Abyssinia forces before effective negotiations could thwart Italy's victory. The negotiations, however, were not continued and soon afterwards hostilities ceased with the fall of Addis Ababa in May, 1936.

**Military Operations.**—The It. invasion was launched on Oct. 3, 1935. Mussolini's war aim being to unite the hitherto isolated It. possessions, Somalia and Eritrea, by conquering all or part of the intervening and independent kingdom of Abyssinia. Hence he delivered his attack simultaneously on two fronts, though the only obvious objective, apart from the psychological import of capturing Adowa, was the railway. Abyssinia's sole route for



Gen. de Bono began three operations simultaneously: an assault on Adowa, which was taken within a few days; an advance southward through Tigré; and an advance from Musa Ali near the Danakil Desert; while Graziani advanced through the Ogaden to menace the Harar plateau and the railway from the S. But the Musa Ali operation dwindled away and Graziani's advance came to a standstill early in 1936. After four months he was little further advanced than when he started. Had the Abyssinians at once exhausted themselves in massed attacks the It. advance at this stage would no doubt have been much more rapid. Bands of Abyssinians from the Tembien mts. and Amhara carried out unexpected successful attacks, these regions not being included in the It. plan of campaign. Early rains, too, helped the Abyssinians; and the earlier air raids failed to impair the morale of the people. Moreover, It. hopes of detaching from Haile Selassie (*q.v.*) not only the recalcitrant Tigrean Races, but also the grievously-oppressed non-Amharan subject peoples, such as the Danakil, Somalis and Gallas, proved ill-founded for the most part, though the Wallo Gallas turned against their Amharan overlords and their disaffection had some influence on the war in the N. zone at its most critical stage.

Throughout the campaign the It. generals took pains to keep down to a minimum the casualties in the ranks of the It. troops, as much as possible of the fighting being left to the airmen, tanks, and armoured cars. If infantry had to be used, the hand-to-hand bayonet fighting was imposed mainly on African natives—Eritrean conscripts and Somali or Libyan mercenaries. The total death-roll was It. troops of African race, 1593; It. workmen, 153; It. troops of It. race, 2313 of which number at least 1000 died of accidents or sickness. The Abyssinians could mobilise a million men; but the Imperial Guard, trained by European officers, only numbered 30,000 of the total, and even these had but only the most elementary training in W. methods of warfare. The rest of the forces were feudal levies raised by local chiefs, lacking training in modern weapons. It is believed that they had no more than 100,000 modern rifles, about 400 machine-guns, and no artillery. When the advance began Graziani had only two divs. at his disposal, the great majority of the It. forces, for political reasons, being concentrated in Eritrea mainly with the view of wiping out the ignominy of Adowa in 1896.

*The Campaign in the North.*—At 5 a.m. on Oct. 3, 1935, the first detachments of the It. forces in Eritrea crossed the March and advanced on Adowa, while their planes raided that tn. and Addi Grati, the latter being occupied next day. A little resistance was met between Addi Grati and Adowa, but on the morning of the 6th, when the It. entered Adowa, they found that the forces of Ras Seyum, Commander in the Tigré, had retreated during the night. The capture of the tn. was, however, celebrated with great rejoicings

throughout Italy. The absence of effective opposition from Ras Seyum lent plausibility to the It. propagandist version that their invasion was in the nature of a peaceful occupation of a countryside, whose people were eagerly awaiting liberation. During the halt after Adowa It. proclamations were issued announcing, *inter alia*, the abolition of slavery and the suspension of customs tolls. As a result defections of inhabs. during the first few weeks were on an extensive scale. The most notable desertion was that of Dejazmach Haile Selassie Gugsa, governor of the E. Tigré and son-in-law to Haile Selassie, the Emperor, who is said to have bitterly resented the appointment of Ras Seyum to the command in the Tigré, and de Bono rewarded him with the appointment of Ras of the Tigré.

On Oct. 15 a deputation of priests handed to de Bono the keys of Axum, the holy city of Abyssinia, which, according to tradition, still held the Ark of the Covenant, brought from Jerusalem by the Queen of Sheba. When the next general move forward began on Nov. 3 towards Mikale, 35 m. distant, neither Ras Seyum nor Ras Kassa of Amhara offered any opposition; but it took the It. five days to cover the journey, heavy rains complicating their transport problems. There now ensued another prolonged pause for road construction and consolidation of ground occupied. But this tardy mode of campaigning did not please the It. gov. or Italy and de Bono was superseded as High Commissioner and Commander-in-chief by Marshal Badoglio, Chief of the It. General Staff, and the most distinguished It. soldier of the time. Time was of the essence of the campaign, for the League had just then decided to impose economic sanctions on Italy as an aggressor, and de Bono's Fabian tactics were unsuited to the altered conditions. Badoglio soon showed that the invasion was the reverse of a peaceful colonial enterprise, and he made no effort to conciliate the inhabs. of the occupied zones, an attitude wh. 2, as later events proved, heralded the adoption in March of the next year of the policy of nightfulness. On Dec. 4, the It. occupied Abbi Addi, cap. of the Tembien, a dist. of rugged heights, cliffs and ravines which the It. never really succeeded in 'combining' or 'mopping up.' Elsewhere on this front the It. forces consisted of little more than scattered outposts.

By Dec. the Abyssinian forces had been strengthened by the arrival of Ras Mulhgeta, War Minister and an Adowa veteran, with detachments of the Imperial Guard. The first really serious engagement of the war on the N. front began on Dec. 15 on the It. right, where Abyssinian detachments from the forces of Ras Idris, governor of Gojjam, had crossed the Takazze riv. in an attempt to turn the It. flank. The It. were driven back 15 m. and the Abyssinians, pressing hard upon this sector, regained most of S. Shire by the end of the year. They also succeeded in reoccupying Abbi Addi at a heavy loss and gained control of the Adowa-Mikale road, thus leaving their foe in a dangerous

salient at Makalle, with the prospect of the May rains precluding any further advance. But Badoglio had made good use of the pause in constructing roads and in re-organising his forces. When he took the initiative again he proved the equal of his foe in mobility and much his superior in strategy and in armaments. In the second week of Feb. 1936 he advanced with a speed which surpassed all expectations and which he maintained till the end of the mobility of his forces not being affected to any extent by rain. Six battles, indeed, were fought and won in a campaign largely through the skill of the Italian engineers and labour corps. Early in the previous month Mulugeta occupied Amba Aradam a mt. 12 m S of Makalle thereby blocking the way to Amba Alagi and supporting Ras Kassa and Ras Seyum in the Tembien. Then followed a five-day battle in the Tembien (Jan. 19-23). There were repeated attacks and counter-attacks by both sides particularly at the Warieu Pass, N of Abbi Addi, which was held by It. Blackshirts.

The Abyssinians now overconfident were massing their forces in order to contest any further It. advance tactics which were certain to play into the hands of their enemy, for while their forces remained scattered the It. use of artillery and air bombardment was much restricted. The battle of Amba Aradam (Feb. 11-13), fought in most intricate country was a disastrous defeat for Mulugeta who did not foresee that Badoglio would attack on both flanks and so surround him. By Feb. 15 Ras Mulugeta and the remnant of his army were fighting their way through and in full retreat southward, while It. planes bombed them relentlessly. Their total losses were said to be about 20,000 men in this one battle. There seems but little doubt that Mulugeta's decision to hold Amba Aradam was the turning point in the fortunes of Abyssinia for while the It. advance could have been checked, it is evident that the defeat of the Imperial Guard accelerated the Abyssinians' disintegration and shattered their morale. The First It. Army Corps then began a cautious advance on Amba Alagi, a strong natural position which was held in considerable force, but owing to the treachery of the suborned Gallas and other tribesmen the flanks of the loyal Abyssinian tribesmen forces were left exposed and the position fell on Feb. 28. Meanwhile the Third Corps moved westwards and secured control of the main line of communication from Dessye to the Tembien. The forces of Ras Kassa and Ras Seyum numbering 30,000 men were now thus almost encircled from the S by the Third Corps, from the N.E. by the Kiritrean Corps, which had been guarding communications from Makalle, and from the N.W. by both the Second Corps based on Axum and the Fourth Corps of new reinforcements. The Abyssinians were driven out of their fortified posts after fierce fighting and heavily bombed as they retreated to the fords of the Takazze, Ras Kassa and Ras Seyum, with the remnant

of their forces—a great many deserted to resume their agr. pursuits—made their way southward and, later, joined up with the Emperor's forces near Lake Ashangi. The Second and Fourth It. Corps now converged on Ras Imru in S. Shire, using a good deal of poison gas. The Abyssinians fled across the Takazze with heavy losses. The way was now open to Badoglio for an advance towards Lake Tana and by mid-March the It. had crossed the Takazze, 'combed' the Semien massif, and entered Walkait across the Setit R. At the same time an It. column of 5,000 men left Asmara in 100 motor vehicles to make a dash on Gondar. They reached their goal over 300 m of difficult terrain in two weeks, but encountered no resistance. On April 12 the It. flag was hoisted on the N. shore of Lake Tana and in Gallabat. The First and Third Corps were also rapidly advancing S. towards Lake Ashangi, while the Third Corps was moving from Abbi Addi towards Sokota, an important junction. The main Abyssinian army, under Haile Selassie himself, was posted near Kworam S. of Lake Ashangi. The Emperor had left Dessye and come N. in the hope of rallying his forces. But the morale of the Abyssinians was crumbling against the terrible weapon of mustard gas, dropped in containers or sprayed from aeroplanes over soldiers and civilians indiscriminately and over the undergrowth in which they sought shelter. Yet they were still capable of a last desperate stand against the It. advance on Lake Ashangi and on Sokota towards the end of March. Anticipating Badoglio's pincer movement the Emperor moved northward for Kworam with 21,000 men and attacked the First It. Corps at Mal Gai above the lake (Mar. 31). The Abyssinians displayed great gallantry but as has been seen, pitched battles were hopeless against modern European forces. The fighting continued till April 4, the Abyssinians holding their ground against gun and air bombardment with forlorn tenacity, finally fleeing in disorder to Dessye, bombed by aircraft along the road. Some of the Emperor's own secretaries and closest collaborators were in the pay of the It. and was borne out by the accuracy with which the It. were able to forecast the Emperor's moves and send bombing planes wherever he went in an attempt to kill him. The persistence with which they attempted to get rid of the Emperor and the eventual results of his departure from the scene justify the view that the whole Ethiopian structure depended on him personally and would collapse if he were killed or removed. Dessye, occupied on April 15, now became Badoglio's headquarters. During the month Addis Ababa was often visited by It. planes. No bombs were dropped, but the machine gunning of the aerodrome and the tales of defeat brought by stragglers from the battlefields deepened the gloom of the inhab., though they still seem to have entertained hopes of assistance from the League of Nations. When that hope

vanished, a proclamation was issued calling on all males to report for military service. On April 30 the Emperor returned to his cap together with Ras Kassa and other generals, just after the Its. had succeeded in piercing the S. defences. The failure of the Emperor's appeal for recruits on May 1, coupled with attacks on his life by his subjects turned brigand, broke his will to further resistance. He had already arranged for the Empress and his family to leave the country, and at the last moment he decided to accompany them. One of his last orders was that his palace should be thrown open in order that the people of the city might take its contents. The result was a vulgar orgy (May 2-4) of looting, rioting, and burning, which involved more than five hundred deaths, including some foreigners. It was not until Marshal Badoglio made his triumphal entry into the city on May 15 that order was restored.

*The Campaign in the southern zone.*—The chief objective of the army on the S. front was the occupation of Harar but Graziani was hampered by the smallness of his forces and his long lines of communication based on Mogadishu and Bandar Qasbi. The main body of the Ethiopian army in the S. was concentrated round Harar and Jijiga under Dejazmach Nasibu. Dolo, near the Kenyan frontier, was occupied at once in order to hold Ras Desta in check. By the end of Oct. the whole of the region between the Wehi Shebeli and the Fafan, S. of Gorahel, was in It. possession. The fall of Gorahel (Nov. 7) was due largely to air raids, and this had a decidedly adverse effect on Abyssinian morale. But on Nov. 11, the Abyssinians won a considerable action at Anile, 30 m. S. of the important Abyssinian post of Dargu Bur, ambushing a number of It. tanks. This defeat, coupled with the rains, led to an It. withdrawal all along the line, while Ras Desta, hitherto inactive, began an advance on Dolo so as to divert It. attention from their drive northwards. In mid-Dec. the main body of his troops were located by aeroplanes 150 m. N.W. of Dolo. An air attack took place near Negelli and Dargu Bur was bombed every day. The ensuing pause enabled Graziani to organise the local tribes. Ras Desta who had made a leisurely descent from the highlands on Graziani's rear, delayed over-long in country where his enemy could make the best use of his modern armament and transport. But despite gallant rearguard actions, the attacking Somalis, Askaris, and It. national troops proved too much for them and they were finally routed by It. tanks in the rear and then subjected to aerial bombardment in their headlong retreat into the Sidamo foothills. Mechanised It. detachments arrived in Negelli, 210 m. from their starting-point, on Jan. 20. This victory and the occupation of Negelli, besides removing the threat to his flank and to his communications, allowed Graziani to advance northwards as soon as weather and other conditions permitted. Moreover, the advance was a valuable political set-

off to de Bono's delays in the N. campaign; and though it was not strategically of much importance, it fully served its political purpose. Graziani now spent his time in consolidating his hold over the country between Dolo and Negelli. When, at the end of the month, the It. advance was resumed, the Abyssinians had greatly strengthened their defences before Jijiga and Harar with deep entrenchments, redoubts and machine-gun posts, which system of defences became known to the Its. as the Abyssinian 'Hindenburg Line.' Both these lns. were heavily bombed from the air with incendiary and explosive bombs, though Harar had been proclaimed an open tn. The Its. now advanced up the valleys of the Wehi Shebeli and the Fafan, and by April 27 they were in possession of the Abyssinian 'Hindenburg Line.' There was, however, fierce fighting near Sasa Baneh, both sides suffering heavy losses and Graziani had to call a halt, owing to the exhaustion of his men. The Abyssinian position, however, threatened as it was in the rear with a possible attack by the It. army in the N. was hopeless in any case, and still more so if they delayed too long in the 'Line.' On April 29 Sasa Baneh and Bulale were captured by Graziani after desperate fighting, the occupation of these two places marking the final collapse of the Abyssinians in the S. The further progress of the It. troops was checked by heavy rains, but by May 8, they reached Harar and by their arrival saved the city from the looting and burning that had marked the abandonment of Addis Ababa.

Later, Haile Selassie went to Djibuti and sailed for Palestine. Soon afterwards the It. gov. announced that Italy had annexed all Abyssinia and made Victor Emmanuel its Emperor. Five years later, following the brilliant Brit. campaign in It. E. Africa, Haile Selassie re-entered Addis Ababa as Emperor. See further under ITALIAN EAST AFRICA CAMPAIGN IN (1940-41) and WORLD WAR, SECOND.

See G. A. Rossi, *I Pirati D'Italia Oltremare*, 1918; *Affairs*, 1936; *Italy, Documents relating to the Dispute between Ethiopia and Italy*, 1935 (Cmd. 5014); A. J. Toynbee and V. M. Boulter, *Abyssinia and Italy* (vol. II. of *Survey of International Affairs*, 1937); 1936. E. W. Wilson-Newman, *The War in Abyssinia*, 1936; M. H. Macartney and P. Cremona, *Italy's Foreign and Colonial Policy, 1914-1937*, 1938; Christine Sandford, *Ethiopia under Haile Selassie*, 1946.

Italy, republic in the S. of Europe, comprising the peninsula which extends southwards from the Alps into the Mediterranean Sea, together with the is. of Sicily, Sardinia, Elba, and various small is. The Alps form a semicircular barrier which separate it from the continent of Europe, from France on the N.W., Switzerland on the N., and Austria on the N.E. Its boundary on the W. is that portion of the Mediterranean known as the Tyrrhenian Sea, while its E. shores are washed by the Adriatic. Its greatest length, measuring in a straight line from N.W. to S.E., is

710 m., its breadth ranges from 354 to 20 m., having an average breadth of about 90 m. The total area of I. was estimated (1945) at 310,000 sq. km or 119,660 sq. m. of which 100,480 q. m. are accounted for by the mainland, exclusive of Sicily (9935 sq. m.) and Sardinia (9299 sq. m.). N.I. is cut off from the rest of the peninsula by the Apennines, which branch off from the Maritime Alps E. of Nico, and run in a S.E. direction from the gulf of Genoa to the Adriatic Sea. The range then turns more to the S. near Urbino, and extends as far as Capo Spartivento in the 'toe' of the peninsula, thus forming the backbone of Central and S. I. It is convenient to consider the peninsula under these three divs.: N., Central, and S. N. I. embraces the provs. of Liguria (Riviera of Genoa), Piedmont, Lombardy, Emilia, and Venetia, including the Trentino. Lying between the Alps and the upper Apennines is the wide plain which forms the basin of the Po. This is shut in all round from Mentone to the gulf of Trieste by the towering Alpine wall, called from W. to E. the Maritime, Cottian, Graian, Pennine, Helvetian, Rhaetic, and Carnic Alps. The highest point is the Gran Paradiso (13,652 ft.), a peak of the Graian Alps. The loftiest summits of the Alps are not included in I. ter. To the S. of the Alps, in the N. of Lombardy and Venetia, lie the beautiful lt. lakes, Lago di Garda, Maggiore, Como, Lugano, and Orto. The fertile plain of Lombardy, as already mentioned, is watered by the Po, which rises near Monte Viso, and is enriched on its way to the Adriatic by numerous tribs. and int. torrents. The prov. of Venetia, to the N. and E. of the Po, is traversed by the Adige, Brenta, Piave, and Tagliamento. Along the coast of the Adriatic, N. and S. of the Po delta, there exist large tracts of salt water, known as lagoons, brackish and marshy dist. They are separated from the sea by narrow banks of sand in which are inlets, so that the lagoons serve as harbours. The chief of these is that on which Venice is situated. It extends over nearly 10 m. from Torcello in the N., Chioggia and Brondolo in the S. The S.W. coast-line of N. I. is formed by a narrow strip of land, closed in by the steep abrupt rocks of the Apennines, and known as the It. Riviera.

**Geography.**—The geography of Central and S. I. is mainly determined by the Apennine range, which, sloping across the head of the peninsula as well as down its length, extends for about 750 m. The culminating point of the border range between N. and Central I. is the Monte Cimone (7110 ft.). The Apennines in Central I. are broken up into many short ranges, particularly in Tuscany. The chief peaks are Monte Catria (5590 ft.), Monte della Sibilla (7663 ft.), Monte Vettore (8128 ft.), and Pizzo di Sevo (7945 ft.), while the culminating peak of the whole range is Monte Corno (9577 ft.) in the Gran Sasso d'Italia. Central I., according to the general div., comprises the five provs. of Tuscany, Rome, Umbria, Marche, and Abruzzi. The first named is watered by the Arno,

Cocina, and Ombrone, all rising in the Etruscan Apennines and flowing into the Tyrrhenian Sea. But the most important riv. of Central I. is the Tiber, the riv. of Rome, which is navigable for 90 m. The chief lakos of this region are the Lago di Celano and Lago Trasimeno, while the Lago di Bolsena, Lago di Vico, and Lago di Bracciano occupy the craters of extinct volcanoes. The volcanic tract extends from the Monte Amiata (5690 ft.) in Tuscany to Vesuvius (nearly 4000 ft.), a detached and active volcano in Campania. On the W. the Apennines slope down to the Pontine marshes, S. of Rome which is connected with the Terra di Lavoro, the plain of Campania, and on the E. to the broad Apulian plains. The provs. of S. I. are Campania, Apulia, Basilicata, and Calabria. The main ridge of the Apennines is continued due S. by the Monte della Maddalena, culminating in the Monte Pollino (over 7000 ft.). The low hills N. of the Gulf of Taranto, between the 'heel' and the 'toe' of I., are of Pliocene formation, while the Calabrian Hills are a broken limestone range where the height rises to 6000 ft. in La Sila, a densely wooded granite mt., the highest peak being Aspromonte (6420 ft.). The rivs of S. I. are not of great importance. The Gariellano flows in a westerly direction into the gulf of Gaeta, about 15 m. from the mouth of the Volturno. The Sele is a short river flowing into the gulf of Salerno. The chief rivs. which flow into the gulf of Taranto are the Agri, Vulture, and Bradano. The rivs. of the E. coast are numerous, and are all short and rapid, the principal, S. of the Po, being the Foglia, Metauro, Fiume, Cilent, Tronto, Sangro, Tefano, Biferno, Fortore, Cervaro, and Ofanto. The coast-line along the Adriatic is practically unbroken but for the promontory of Gargano. The is. of I.—Sicily, Sardinia, Elba, the group of Lipari Is. N. of Sicily, Giglio, Capri, etc.—are dealt with in separate articles. The harbours of the Adriatic are Venice (pop. 303,200), Ancona (90,000), Brindisi (42,000), Barietta (46,000), and Bari (197,100); the large harbours belong to cities of the W. shore, Genoa (pop. 619,300), Spezia (111,700), Leghorn (124,700), Civita Vecchia (23,100), Naples (944,000)—and in the S. is the fine harbour of Taranto (180,800). The cap. of I. is Rome (pop. 1,573,900), and its prin. inland tns. are Turin (702,000), Milan (1,270,000), Verona (162,900), Mantua (712,900), Parma (122,500), Modena (112,700), Bologna (279,200), Florence (331,300), Pisa (67,000), Lucca (79,100), Siena (47,815), Perugia (137,500) and Potenza (16,000).

**Climate.**—The climate of I. is in general hot, but is tempered by the long coast-line, while on the uplands it is cool and pleasant. There are great differences in temp. and atmosphere between N. and S. I. The plain drained by the R. Po has the most extreme cold, while the It. Riviera enjoys a warm, sunny climate all the year round. The Adriatic coast is exposed to biting N.E. winds, but Tuscany and Rome, and the greater portion of the

W. half of the peninsula, enjoy a mild winter and have a very hot summer. The rainfall during the summer months is slight but there are heavy rains in late autumn. A large portion of I suffers from malaria, the chief areas so affected including the marshes of Grosseto and Orbetello the Rom (ampagna, the Pontine marshes, and the dist. between the gulf of Manfredonia, and the gulf of Taranto. Efforts have been and continue to be made by the gov. to mitigate the evil by improving the drainage and by combining agricultural improvements with hygienic advantages.

*Cultivation, Flora, etc.*—In the N plains of I no plants and trees thrive

is declining. Rice is grown extensively in the Po valley, and oats, barley, and rye are also valuable crops. The cultivation of grass and green forage is extensive, and in some dists. as many as nine crops have been reaped from the same field in one year. The vineyards occupy about 11,000,000 ac. or one third of the total cultivated area. Over a thousand million gals. (45,000,000 hectolitres) are produced yearly. The chief It. wines for export are the Sicilian Marsala, the Piedmontese Vermouth, and the Chianti produced in Tuscany. The numbers of live stock are increasing and the large produce of milk in the country gives rise to a large



THE DOME OF ST. PIERRE AND (RIGHT) CHURCH SAINT ANTOINE (POPE OF HADRIAN)

which cannot endure the frosts of winter. Along the Riviera of Genoa the climate is extremely favourable for the growth of olives, oranges, lemons, date palms, and citron trees which are also found in great profusion in the S. The mulberry is grown extensively in Tuscany and elsewhere, and there are many vineyards on the lower slopes of the Apennines. The sugar cane, cotton plant, prickly pear, pomegranate, all flourish in the warmer regions. In the forests and on the mt. sides are found the chestnut, cypress, laurel, myrtle, oleander, arbutus, and evergreen oak. Agriculture is the chief industry of the country, about 70 per cent. of the total area of I being under cultivation. The principal crop is wheat, nearly 12,500,000 ac. being under cultivation. The average yield per ac. is less than half a ton, but in the wheat dists. of Emilia and Romagna and in the reclaimed lands at the mouth of the Po, as much as two tons per ac. have been harvested. Next in importance is the cultivation of maize (average ann. yield 3,670,000 tons), but the consumption of maize as human food

is declining. The best known varieties of It. cheese are Gorgonzola, Casu Marzu, and Parmesan. A great variety of fruit is grown—oranges, lemons, figs, peaches, apricots, and prickly pear. Almonds are cultivated in the S. and in Sicily and Sardinia, and hazel nuts, pistachios, walnuts, and chestnuts are among other products. The mulberry tree, cultivated on account of its leaves which serve as food for silkworms. The breeding of silkworms is of importance in the N. provinces of Lombardy, Piedmont, and Venetia, where silk is manufactured in the large towns.

*Industry and Commerce.*—Other important industries are the manufacture of thread, cotton, wool, chemicals, jute, glass, and ceramic wares. Machinery of all kinds is manufactured at Terni, Savona, Naples, and elsewhere. The textile trades and motor car industry made rapid progress after the First World War. The manufacture of tobacco and salt is a gov. monopoly. I. has also tanneries, breweries, paper-mills, straw-hat factories, engineering workshops, chemical works, etc. The chief minerals found are

sulphur, zinc, mercury, coal, iron, and lead. The production of coal is unimportant, and its use is largely replaced by water-power and electric-power generated from water. The growth of industry is due to the latter. Under the Fascist régime the commercial and industrial policy was directed towards the development of irrigation and drainage, land reclamation, application of agricultural research, reafforestation, building of houses and roads, anti-malarial campaigns, etc. In the fishing industry only the sardine and tunny fishing is of importance. The chief imports are foodstuffs, coal, iron, hides, rubber, and silk-cocons. The chief exports are fruit (dried and fresh), wine, olive oil, hair, straw hats, worked coal, raw silk, cotton tissues, and silk tissues.

**Communications.**—The construction of railways dates from 1839, when a line was opened from Naples to Portici (5 m.). Now there are two main lines running the entire length of I. along both sides of the Apennines and connected with the lines of the N. plain, together with numerous minor lines, the total length, including the lines in Sardinia and Sicily, being (1939) 11,500 m. The main lines (11,000 m.) are under State control. The electrification of railways has been carried out in recent years, and by the beginning of the Second World War over 3000 m. of public and private line were electrified, excluding the electric tramway system, which covers nearly 3000 m. Before the war there were some 2000 electric locomotives and 2500 steam locomotives. By the end of the war this number was reduced to 400 and 800 respectively with a corresponding decrease in the number of serviceable coaches and wagons. The total mileage of roads is (1940) 127,000 m., of which 13,500 m. are State roads. Telegraph lines cover some 42,000 m., and there are 10,000 telegraph offices with 11,000 post offices. The prin. canals are in the valley of the Po, connecting Milan to the Po, Adda, and Ticino. The delta of the Po is so much obstructed with sand that navigation from the sea to the riv. is carried on by means of the three canals, Canale Bianco, Po di Primaro, and Po di Volano. The mercantile marine included (1939) 2300 sailing vessels of 100,000 metric tons, 1060 steamships of 1,600,000 metric tons, and 300 motor ships of 380,000 metric tons. The total tonnage of the mercantile fleet was over 3,000,000 metric tons in 1939. By the end of the Second World War this was reduced to 500,000 metric tons, chiefly fishing vessels; in 1916 the tonnage of sea going vessels (123) was 691,700.

**Population.**—At the first general census (1871), taken after the unification of the kingdom, the pop. was 26,801,154. In 1881 it had increased to 28,450,628, and in 1901 to 32,965,504. In 1910 the pop. was estimated at 34,947,865, and in 1921 at 38,716,433. Under the Fascist régime strenuous efforts were made by the gov. to keep up the birthrate and celibacy was penalized. In the 1931 census the total had risen to 41,176,671; in the 1936

census to 42,993,602; and was estimated in 1947 to be 45,646,000 (excluding Venezia in Giulia and Zara), an increase of 2,652,000 over the 1936 total. According to this census the population was distributed among the regions as follows:—Lombardy, 6,298,000; Veneto, 4,654,000; Sicily, 4,356,000; Campania, 4,175,000; Piedmont, 3,580,000; Emilia, 3,488,000; Tuscany, 3,099,000; Latium (including Rome), 3,159,000; Apulia, 3,027,000; Calabria, 2,006,000; Abruzzi e Molise, 1,687,000; Liguria, 1,506,000; Marches, 1,352,000; Sardinia, 1,196,000; Venezia Giulia e Zara, 977,257; Umbria, 780,000; Venezia Tridentina, 689,000; Lucania, 543,262. For the pop. of tns. see above under *Geography*.

**Government.**—Formerly a constitutional monarchy I. was declared a republic as a result of the referendum held on June 2, 1946. The Constituent Assembly consisted of 556 deputies, elected by popular suffrage at the General Election also held on June 2, 1946, and was then the sole legislative body. The Senate which existed under the monarchy was abolished. The Constituent Assembly which came into existence for a period of one year, later extended to eighteen months, then assumed the task of framing a republican constitution.

The new constitution was passed by the Assembly by 453 votes to 62 on Dec. 22, 1947 and came into force on Jan. 1, 1948. The first Article describes I. as 'a democratic republic founded on work' and emphasises the constitutional sovereignty of the people. Parliament consists of the Chamber of Deputies and the Senate. The Chamber is elected for five years by universal and direct suffrage, on the basis of one deputy for every 80,000 inhabs. Deputies must be at least twenty-five years of age. The Senate is elected on a regional basis, each region having at least six senators, one for each 200,000 inhabs. (the Valle d'Aosta has one senator only). The President of the Republic, who is himself a senator by right and for life, can nominate six senators for life from eminent men in the social, scientific, artistic and literary spheres. The President is elected in a joint session of the two houses, to which are added three delegates from each Regional Council (one from the Valle d'Aosta). A two-thirds majority is required for election, but after three indefinite scrutines, an absolute majority is sufficient. The President must be at least fifty years of age and his term is seven years. The President of the Senate acts as his deputy. The President is empowered to dissolve the chambers of Parliament, except during the last six months of his term of office. The defeat of a gov. bill does not involve the resignation of the gov., which can be compelled to resign only on a motivated motion of censure. For administrative purposes I. is divided into nineteen Regions, each Region being sub-divided into *provs.* and *coms.* The organs of the Regions are the Regional Council, the Junta (executive), and the President of the Junta. A gov. commissioner super-



vises and co-ordinates the regional administration. Sicily, Sardinia, Trentino-Alto Adige, Friuli-Venezia Giulia and Valle d'Aosta have been granted special statutes of autonomy. A Constitutional Court, consisting of fifteen judges—five each being appointed by the president, Parliament in joint session and the Supreme Law Court—has rights similar to those of the Supreme Court of the U.S.A. It is empowered to decide on the constitutionality of laws and decrees, define the powers of the State and Regions, adjudicate on conflicts between the State and Regions or on inter-Regional conflicts, and try the president of the republic and the ministers.

The reorganisation of the Fascist party is forbidden. Members and descendants of the House of Savoy are excluded from all public offices, have no right to vote or to be elected, and are forbidden to enter It. ter.; and their estates are forfeited to the State. Titles of nobility are no longer recognised, but those existing prior to Oct. 28, 1922 (the date of the Fascist 'march on Rome') are incorporated as part of the name.

**Defence.**—Under the Fascist régime military service was compulsory and universal for men between the ages of 21 and 35. The army was divided between the Metropolitan Army with a normal peace time establishment of 260,000, and the Colonial troops. At the beginning of the Second World War a million and a half men were mobilised including 132 battalions of the Black Shirt Militia, normally part of the Voluntary Militia for the National Security (M.V.S.N.). The *Carabinieri*, or military police, numbered over 50,000 in 1939. The navy with a personnel of 4000 officers and 75,000 men consisted, in 1939, of 6 battleships, 20 cruisers, 52 destroyers, 65 torpedo boats, and 90 submarines. The battleships of the *Littorio* class had a standard displacement of 35,000 tons and carried 9 fifteen-in., 12 six-in., and 12 three-point-five-in. guns. The air force, including army co-operation units and the naval air arm, mustered 2000 first-line aircraft in 1939 with 400 reserves.

Under the provisions of the Peace Treaty (1947), the army is limited to 250,000 men, to include the *Carabinieri* with a strength not exceeding 75,000. The 35,000 ton battleship *Italia* (formerly *Littorio*), and the *Fulvia Veneto*, the 23,000 ton battleship *Giulio Cesare*, 7 cruisers, 7 destroyers and other vessels were surrendered to the Allies. Eight submarines were also surrendered, and the remainder destroyed. The post-war navy consists under the Peace Treaty of two 23,000 ton battleships, 5 cruisers of not more than 7000 tons, 4 destroyers, 15 torpedo boats, 20 corvettes and minesweepers. The total strength is limited to 25,000 officers and men. The air force including the naval air arm is limited to 200 fighter planes and 150 planes of other types, with a maximum personnel of 25,000. Bombers are forbidden under the Peace Treaty.

**Finance.**—Under the Fascist régime the taxation system and the levying of

taxes were simplified. To maintain family ties and encourage capital, death duties were abolished while, for many transitory taxes, more permanent sources of revenue were substituted. Among sources of revenue other than taxation and excise and customs are state monopolies, state railways, and stamp duties. I. entered the Second World War with an internal debt of 200,000 million lire and a deficit of over 12,000 million lire, of which 5700 million were in the ordinary budget and 6500 million in extraordinary accounts, i.e., military exigencies and the development of the empire. At the end of the war the internal debt stood at 850,000 million lire. For the fiscal year 1946-47 the deficit was 610,000 million lire, and for the following year revenue was estimated at 520,000 million lire and expenditure at 872,000 million, involving a deficit of 312,000 million.

**Education.**—Education, controlled by the State, is under a minister, assisted by a council. Primary education is free and compulsory, and the state also maintains, partly or wholly, secondary, technical schools, and the universities. Education was the primary concern of the Fascist gov., and the education theories of Prof. Gentile were put into practice. Under his system, educational programmes were laid down, but the teachers were free to arrive at the results therein determined by their own methods. There was, however, no departure from Fascist principles, which were further inculcated through the youth organisations, the *Ballila* for boys from the ages of five to fifteen and the *Avanguardisti* from fifteen to eighteen. The subservience of education to the Fascist state was completed by the so-called School Charter (*Carta della Scuola*) of 1939, education of women was discouraged and co-education forbidden. With the overthrow of Mussolini education was freed and enabled to return to its liberal tradition. The reorganisation of education was one of the most difficult problems in I. in 1945. Owing to some extent to the outbreak of war the School Charter had never really been operative, and school life had subsequently become thoroughly disorganised, partly on account of a lack of teachers, and partly owing to the destruction of numerous school buildings in the war. With the restoration of peace it was found possible only to allot one school-house to two schools, so that each pupil had only half a day's education from the state. Often the political party organisations provided lessons and, with the co-operation of U.N.I.R.A. (q.v.), a meal during the hrs. left free. This linking of politics with social relief was a dangerous inheritance from fascism but it was essential to seek relief where it could be found. Among reforms most discussed in I. today are the extension of elementary education, the development of a scholarship system, and the end of the choice between classical and scientific *licei*. Professor Marchesi, a strong anti-fascist, is the leading advocate of a uniform classical secondary-school education. I. is fortunate in its univ. life. There are

over twenty univs, most of them supported by the state. Many are of very ancient foundation. The univs of Bologna, Genoa, Macerata, Naples, Padua, and Perugia date from the thirteenth century, and those of Ferrara, Pavia, Pisa, Rome, and Siena from the fourteenth. When the end of the war brought the students back to the univs these became more overcrowded than ever before. Thus, in the academic year 1915-16 there were nearly 32,000 students at Naples, nearly 30,000 at Rome, 20,000 at Milan, 12,000 in Turin, 11,000 at Bologna and 10,000 at Bari.

*Religion* — The Rom. Catholic Church is re-organised as the State Church, but toleration is granted to all creeds. Over 97 per cent of the pop. is Rom. Catholic. By the Act of 1871 the rank of the pope as a sovereign prince is recognised, the Vatican and Lateran palaces and the papal villa at Castel Gandolfo having the privilege of extraterritoriality. This cleavage between Church and State had hindered the unification of I., and under the monarchy the 'Rom. Question' was a source of political difficulty. But on Feb. 11, 1929, Mussolini signed a treaty, a concordat, and a financial convention with Cardinal Gasparri, the papal secretary of state for Pope Pius XI. The law of Papal Guarantees was abolished, and the pope recognised the It. Kingdom under the Savoy dynasty, Rome being the capital. The sovereignty of the Papacy over the Vatican was maintained, and St. Peter's and the Vatican palaces became neutral and inviolable, forming the Vatican City. (q.v.) In the summer of 1931 another rupture occurred between Church and State over the nature of the Azione Cattolica, but an agreement was arrived at on Sept. 2. The pope also has jurisdiction over the Lateran, the Palazzo della Cancelleria, the residence of the Cardinal Vicar, and the Papal Villa. By the concordat, the right to appoint Italian bishops remained with the Holy See, but newly appointed bishops were to take the oath of allegiance to the king. By the financial convention, I. paid the Holy See 750,000,000 lire together with 5 per cent bonds to the nominal value of 1,000,000 lire.

In the newly formed republic, the position of the papacy was not defined until the passing of the constitution of Dec. 22, 1947, though before that date a strong body of Catholic opinion was in favour of renewing the concordat in the new constitution. In the result the treaty of Feb. 1929 was confirmed by article 7 of the constitution, laying down that the Catholic Apostolic Rom. religion is the only religion of the state. Other creeds are permitted, provided always they do not profess principles, or follow rites contrary to public order or moral behaviour. The profession of such creeds is free, and discussion on religious matters is freely admitted. In practice, however, protestants labour under many disabilities. The appointment of archbishops and bishops is made by the Holy See, but before proceeding to such appointments the Holy

See submits to the gov. the name of the proposed appointee in order to obtain an assurance that the gov. will not raise objections of a political nature. (Catholic religious teaching is given in elementary and intermediate schools. Marriages may be solemnised before a Catholic clergyman in accordance with the rules of canon law, or before a clergyman of any other religion admitted by the state. Marriages can also be concluded before a registrar.) Religious statistics of the 1931 census show Rom. Catholics, 11,011,000; Protestants, 83,600; Jews, 74,300; atheists or of no religion, 17,000.

*History* — The name of I. was, until 49 B.C., confined to the narrow S. extremity or toe of the peninsula, the district lying between the gulfs of Squillace and Euphemis. During the republic the word was applied to the whole country S. of the Apennines, and ultimately was used to include the whole of the peninsula. The early hist. of I. is inseparable from that of Rome, which is dealt with in a separate article. Under the wise administration of Augustus I. was for the first time dealt with as a whole, and its unification thus gradually took place. Rom. rule of the peninsula continued up to A.D. 476, when Odoacer, leader of the Herulian mercenaries, deposed the young Romulus, last Augustus of the W. empire, and placed the kingdom under the rule of Zeno, the Byzantine emperor. Odoacer, who had been pronounced 'patrician' by the emperor and 'king' by his soldiers, ruled in I. until he himself was conquered and deposed in 493 by Theodoric, King of the Ostrogoths. Theodoric was a wise and just ruler and chose his ministers from among the Rom. pop. At his death (c. 526) Theodoric and Narces sent by Justinian, invaded and reconquered the country. In 568 the Lombards, who had been employed by Narces as mercenaries, swept down upon I. from the N. under the leadership of their king Alboin. Pavia was captured after a three weeks' siege, and made the capital of the new kingdom. The Lombards spread S., and formed the two duchies of Spoleto and Benevento, but lacked the strength to occupy Rome, Ravenna, Venice, the Is. of Sicily, Sardinia, and Corsica, and the important sea towns. Their rule was very oppressive until Gregory the Great (590-604) converted them to orthodoxy and established Rome as the rallying point of the whole nation. In 756 the Lombards were defeated by Pepin the Frank who captured Ravenna, Pentapolis and several cities in Romagna and Spoleto, which he yielded to the pope, thus ending the temporal sovereignty of the Rom. Church. The conquest of the Lombards was completed by Charlemagne, Pepin's son, who deposed his father-in-law Desiderius, the last Lombard king, in 774 and was crowned emperor of the Romans in 800 by Pope Leo III.

The cities and Sicily still remained under the rule of the Frankish emperor, and were undisturbed by the Frankish conquest of the N. The Carolingian line ended in 858, with the deposition of Charles the Fat. The following seventy-four years was a

period of misrule and anarchy. Before the end of the ninth century, hordes of Saracens began to overrun Sicily, Calabria, and Apulia, while in the tenth century the plains of Lombardy were laid waste by the invasions of Magyars and Northmen. The Ger. King of Saxony, Otto the Great, was called in by the enemies of Berengar, who was forced to pay tribute and acknowledge Otto as his overlord. After this the Ger. king was more impotent than ever, and in 962 was deposed, being now considered as a first of the Ger. empire.

the gradually increasing power of the *commune*, a word first used in connection with Milan, the citizens of which city had united in a *parlamento*.

The Saxon policy of interference in the papal election was followed by Conrad's successor Henry III., who, finding three popes in Rome, abolished them all, and bestowed the see on a Ger. bishop of his own choosing. During the minority of his son Henry IV., who succeeded him in 1056, Archdeacon Hildebrand of Soana, afterwards Pope Gregory VII., threw his



LAKE ORTA IN PIEDMONT AND THE ISLAND OF S. GIULIO  
The church on the island was built in the fourth century.

About this time, when I was a divided country, governed by foreigners from a distance, the Lombard cities of Milan, Pavia, Genua, Venice, and Florence began to rise in power and to gain some degree of independence. The Saxon emperor encouraged this spirit of municipal independence which crushed the power of the turbulent counts. His son and grandson, Otto II and Otto III., however, had not his powers of discipline, and on the death of the latter in 1002 Arduin, Marquis of Ivrea, claimed the crown and was supported by Lombardy and Pavia. The Saxon dynasty, however, continued in Henry of Bavaria, who gained the alliance of Milan, and crushed her rival, Pavia. On Henry's death in 1024, Hrobert, archbishop of Milan, offered the crown to Conrad, the Franconian king of Germany. During this century there should be noted

the struggle into strengthening the power of the papacy. He determined to throw off the yoke of the Ger. Emperor and the Italian counts by enforcing the celibacy of the clergy, by abolishing the investiture of ecclesiastics by secular authority, and by vesting the papal election in the hands of the Rom. people under the guidance of the clergy. During the ensuing faction between pope and emperor, Gregory was supported by Robert Guiscard and his son Roger Norman adventurers who had occupied Apulia, Calabria, and Sicily, and had strengthened their hold on these dominions by obtaining papal investiture of lands which they agreed to hold as fiefs of the Holy See. In 1084, Henry IV. seized Rome, but, after his death (1106), the War of Investitures was continued by his successors, and ended in the Concordat of Worms (1122) whereby the emperor

abandoned his authority over papal elections.

During the ensuing three decades the N. cities were each a single republic; the bishops were superseded by consuls, who, assisted by a council of burghers, administered the law. Rome shook off for a time the sway of its bishop, and under Arnold of Brescia estab. a republic with a senate on the lines of ant. Rome. On the death of Conrad, his nephew Frederick, surnamed Barbarossa, was elected emperor. Under his rule the old feud between emperor and pope was renewed. He crossed the Alps in 1154, determined to exercise his imperial rights and to put an end to the warfare of the cities. Milan at once rose up in arms against him, but Frederick, after laying waste some smaller cities, marched on Rome and was crowned by Adrian IV. (Nicholas Breakspear), the only pope of Eng. birth. He marched upon Milan and forced it to surrender. But in 1159 Milan was again in revolt, and after a lengthy siege was laid waste (1161). Later, united in one league, called the League of Lombardy, against their foreign ruler, they built a new city, which they named Alessandria, after their staunch ally Pope Alexander III., whom Frederick had driven from Rome in 1167. Alessandria withstood a siege during 1174-75, and in 1176 the allied forces inflicted a crushing defeat upon Frederick at the battle of Legnano. In 1177 the emperor made terms with the pope for a six years' truce, and in 1183 a permanent peace was ratified by the treaty of Constance, which granted to the Lombard tns. the right of war and self-gov. During the short reign of Frederick's successor, Henry VI., the strife between Guelphs and Ghibellines broke out in I. In Germany it had stood for a quarrel between two rival dynasties, but in I. the Guelphs represented the papal party, i.e. Rome and the League of Lombardy, while the Ghibellines stood for the imperial party. On Frederick's death (1190), Henry laid claim to the whole of I. and the two Sicilies, his claim being acknowledged in 1191. During his son Frederick II.'s long minority, the power of the pope extended as far as Constantinople at the time of the fourth Crusade (1198-1204). The spoils of war were shared with Venice, who had volunteered her fleet for the transport of men. Thus Venice became estab. as one of the most powerful commercial cities of the Mediterranean. In 1220 Frederick II. was crowned king and emperor, the virtual ruler of Germany, I., the Sicilies, and Jerusalem. He made a determined effort to crush the league and subdue the pope, but the powers pitted against him were too strong. Pope Gregory IX. excommunicated him in 1227, and Innocent IV. declared him dethroned at the council of Lyons in 1245. The Swabian line ended in 1260 and in 1273 Rudolph of Hapsburg was crowned emperor by the pope, and five years later made a public recognition of the pope's temporal sovereignty in the papal states. The Guelph party was now supreme in the N., but lost much of their influence in the S. when Sicily rebelled against Charles of

Anjou and placed itself under Aragonese rule (1282). At the end of the century the Guelphs of Florence were divided into two factions—the Neri and the Bianchi. In 1300 Boniface VIII. called in Charles of Valois, who banished the latter faction and then undertook to manage the affairs of the republic. In 1309, the pope, Clement V., being a Frenchman, the seat of the papacy was transferred to Avignon, where it remained till 1377.

The period of nearly seventy years was marked by great commercial prosperity. The N. tns. still made war upon one another, but the burghers paid companies of adventurers, *condottieri*, to do the fighting. The rural counts lost their power and became citizens of the tns., and the office of *poderà* was now practically that of a judge. In many tns. his place was taken by a new functionary, the *captain of the people*, who was a leader of Guelphs or Ghibellines, whichever party was in the ascendant, and whose powers, being ill-defined, tended to become unlimited. In the N. the popes lost their prestige as it potentates by the removal of the Holy See to Avignon. Rome nominally obeyed her bishops, but the temper of the times was shown in the brief republic (1347-51) set up in the city by Rienzi on semi-classical, semi-feudal lines. The duchy of Milan was governed by the powerful Visconti dynasty till 1447. Under the powerful prelate Gian Visconti (d. 1354) the duchy conquered Genoa and a large portion of N. I. But in 1450 Filippo's son-in-law and general, Francesco Sforza, seized the Visconti's possessions with the aid of his Florentine ally, Cosimo de' Medici, and proved himself to be a wise and liberal-minded ruler. Until 1343 Florence had been subject to an adventurous foreigner, Walter of Brienne, Duke of Athens. For the following hundred years, with the exception of a short-lived revolution of artisans, the city was governed by an oligarchy headed by the Albizzi family. During this period Florence achieved the subjection of Pisa and extended her dominion in Tuscany. But the oligarchy was opposed to the wealthy and democratic family of Medici. In 1434 Cosimo de' Medici estab. a republic of which he assumed the presidency. He strengthened his position by making the alliance with Francesco Sforza mentioned above. The presidency maintained by Cosimo became a dictatorship under his grandson, Lorenzo the Magnificent. The hist. of Venice was very different from that of the other great I. states. In the eleventh century the administration lay in the hands of the popular representative, the doge. After a series of revolutions, however, the oligarchical principle was estab., and in 1311 the Council of Ten was formed. In the middle of the fourteenth century she began her struggle for maritime supremacy, which ended in victory (1381). In 1406 Venice added Verona, Vicenza, and Padua to her I. possessions, and during the long dogship of Francesco Foscari (1423-57) extended her dominions in the mainland. I. was now divided into a number of commonwealths. Every one of them was governed by an oligarchy or

an It. prince, but the individual enjoyed liberty, and every encouragement was given to literature and art.

Peace lasted till 1494, when a new age opened for I. Throughout the following century the country was a battlefield on which France and Spain fought out their quarrels and strove for new conquests. In 1494 Charles VIII. of France invaded I. at the request of Lodovico Sforza, who was anxious to become Duke of Milan. Charles, after having the Medici expelled from Florence, marched S. and was crowned in Naples. In the meantime Lodovico assassinated his nephew, Gian Galeazzo, and roused Lombardy against Charles, who with difficulty made good his retreat to France. The way was now opened to other invaders. In 1499 Louis XII., the successor of Charles, subdued Milan, and in 1504 invited the Emperor Maximilian to assist him in the conquest of Venice. In the confusion the papacy made a most determined and successful defence against the foreigners. In 1508 was formed the League of Cambrai with France, Spain, and Germany against Venice. But in 1512 the army under Gaston de Foix fought a fierce battle against the combined Fr., Venetian, and papal troops on the banks of the Ronco about 2 m. from Ravenna. The Fr. were victorious but Gaston fell in the act of pursuing the enemy. The Fr. returned in a few years. In 1515, their new king, Francis I., was victorious at the battle of Marignano, and entered Milan, but in 1524 was expelled by the troops of Emperor Charles V. The devastating war ended in the peace of Cambrai (1529), by which Charles V. was left in possession of I. In 1537 the Fr. took possession of the ters. of the dukes of Savoy, but these were ceded to Philip, the son of Charles V., by the treaty of Cateau-Cambrésis (1559). Venice, Genoa, Lucca, and San Marino were allowed to retain their independence.

Until the end of the eighteenth century it may be said that I. now ceased to have a hist. of her own. Wars in which she had no interest, but was the patient sufferer, continued to be fought on her soil. Venice regained some of her lost power by the conquest of the Peloponnese (1681), but this was recaptured by the Turks in 1715. Piedmont was ceded by Spain to Emmanuel Philibert, who regained Savoy and Nice. The War of the Sp. Succession (1701-13) led to a redistribution of It. land. By the treaty of Utrecht (1713) Austria succeeded to the Sp. dominions, and Sicily was given to Victor Amadeus, duke of Savoy, with the title of king. In 1720 he had to yield that is, to Austria in exchange for the kingdom of Sardinia. I. was subjected to a further redistribution at the end of the War of the Austrian Succession. By the treaty of Aix-la-Chapelle (1748), Milan, which had been captured by Austrians in 1714, was ceded with Tuscany to the House of Austria; the Bourbon, Charles III., was confined in his kingdom of the two Sicilies; his brother, Don Philip, was given the duchy of Parma; Piedmont and Sardinia remained in the hands of the House of Savoy; and

Modena and Genoa were placed under the protection of France, to whom the Genoese surrendered Corsica in 1755.

For forty-four years I. enjoyed peace. Tuscany was ruled by lieutenants until the death of Francis I. in 1765, when his second son, Peter Leopold, afterwards Emperor Leopold II. (1790), was made grand duke. His rule was characterised by its agric. improvements, suppression of the Inquisition, and wise reforms. He performed a lasting benefit to his subjects by draining the Val di Chiana. The rule of Maria Theresa in Lombardy was also remembered as a period of internal peace.

The chief event after the treaty of Aix-la-Chapelle was the invasion of I. by the Fr. Republican armies in 1796. In the following year the Emperor, Francis II., was forced to sign the treaty of Campo Formio, by which Venice and the ters. N. of the Adige were given to Austria, and the rest of N. and Central I. was divided up into republics, such as the Cisalpine, Tiberine, Ligurian, Capadane, and Parthenopæan republics. The great cities were filled with a wild hope of liberty, but they soon discovered that their freedom was but nominal under the presidency of Napoleon Bonaparte. In 1799 the Russian troops gained a victory at Trebia, and in 1800 Napoleon crossed the Alps and confirmed his previous victories at the battle of Marengo. The Cisalpine republic was declared the *Italian* republic in 1802, and Napoleon was crowned King of I. at Milan in 1805, and in the following year he made his brother Joseph king of Naples. But at the overthrow of Napoleon in Paris (1814) the kingdom of I. crumbled to pieces, and at the Congress of Vienna (1815) the allies redistributed the country among themselves, but the pope was left in possession of the Papal States.

The result of the Napoleonic invasion of I. was that the rule of the petty princes was more oppressive than ever, but national pride had been aroused and had given birth to a great hope for the future unity and self-gov. of the whole country. Secret societies, the most important of which was the Carbonari, flourished among the educated classes; risings broke out in the S. (1820); and in 1831 the fiery young patriot, Giuseppe Mazzini, organised a political society called *Giovane Italia* (Young Italy) for the emancipation of his country. Mazzini came to London, from which, by means of literature, he actively propagated his republican theories among his countrymen. The more moderate Liberals, as is shown in the writings of Leopardi and Foscolo, despaired of the future of I. In 1848, the year of revolutions, insurrections broke out in Lombardy, but the Austrians won the battle of Custoza, and placed the country under martial law. Pope Pius IX., who since 1846 had passed certain measures of reform, was torn between his desire to support its freedom and his fear of making war on Catholic Austria. His authority, in consequence, weakened daily; he was declared traitor, and fled in disguise to Gaeta. Mazzini hurried back to Rome, and a republic was set up with himself

and two others as triumvirs. In 1849 Charles Albert received a crushing defeat from the Austrians under Radetzky, and abdicated at Novara, leaving his son, Victor Emmanuel II., to make the terms of treaty. Lombardy reverted to Austria, and a part of the Piedmontese ter was also ceded. In the same year Leopold and Ferdinand, who had joined the pope at Gaeta, returned to take up the reins of gov. France decided to restore Rome to the pope and sent Gen. Oudinot to besiege the city. He was defeated at Civita Vecchia by Garibaldi recently returned

against Francis II., the son of Ferdinand, and was assisted by Garibaldi, who won victories at Calatimni and Melazzo. Assuming the title of dictator, he entered Naples in Sept. 1860, Francis having fled. The united troops of Garibaldi and Cavour defeated the Papal States at Castellidardo, and the Neapolitans at the Volturno. Sicily and Naples were annexed to Sardinia in Oct., and Garibaldi hailed Victor Emmanuel as 'King of Italy.' In 1861, at the assembly of the first It. parliament in Turin, Victor Emmanuel was decreed king of I., and Garibaldi resigned from his



THE MEETING OF GARIBOLDI AND VICTOR EMMANUEL

Painting by Carlo Ademollo

W. E. Minnell

from exile in S. America. The Neapolitans, augmented by Sp. soldiers, marched northwards, and were also defeated by Garibaldi at Palestrina and Velletri, but in spite of these successes the Fr. troops succeeded in entering Rome, and the pope returned in 1850.

At this time almost of despair, Cavour came into prominence as the champion of the national movement. In 1852 Victor Emmanuel appointed him prime minister. The Società Nazionale was formed, with the motto 'Unity, Independence and Victor Emmanuel.' The king and Cavour secretly encouraged the movement, though their only avowed aim was to expel the foreigner. In 1858 Cavour entered upon negotiations with Napoleon III. which resulted in the outbreak of a Franco-Austrian war (1859). In the same year the Austrians were defeated at Montebello, Palestro, Magenta, and Solferino, provisional govts. were estab. in Florence and Modena; and an insurrection broke out in the Papal States. S. Italy rebelled

dictatorship. In this same year Cavour died. Rome was still held by the pope and the Austrians were in possession of Venice. In 1862 Garibaldi raised troops to liberate Rome, but was defeated at Aspromonte, and Rom. Catholic opinion throughout Europe was opposed to the annexation of Rome to the new kingdom. Fr. troops had held that city since 1849. By the Franco-Italian Convention of 1864, the It. agreed to evacuate Rome within two years on condition that the Papal States were recognised and the cap. of I. was moved from Turin to Florence. In 1867, in spite of the agreement of 1864, Garibaldi made sev. attacks on Rome and consequently Louis Napoleon sent back his troops, who defeated the Garibaldians at Mentana. Rome continued to hold out until 1870, when, during the Franco-Prussian war, the It. army under Gen. Cadorna, after a brief resistance entered the city. In 1871 Rome was inaugurated as the cap. of the kingdom, but the pope, Pius IX., refused to abandon his temporal

sovereignty, and withdrew as a voluntary prisoner to his own domains, which were allowed the privilege of extraterritoriality.

The consolidation of I., since the formation of the kingdom, has been slow and difficult, owing to the great social differences between N. and S. In 1876 Victor Emmanuel died and was succeeded by Humbert I. (b. 1841); thus IX. being succeeded by Leo XIII. in the same year. Humbert's reign was characterised by electoral reform (1881) and foreign colonisation. Somaliland, along the N.E. coast of Africa, was acquired between 1880 and 1890, and the dependency of Eritrea was founded in 1882. I.'s claims to a protectorate over Abyssinia led to war, which ended in an It. defeat at Adowa (1896), and the restoration of all land to Abyssinia by the treaty of Addis Ababa (1896). In 1883 I. joined Germany and Austria, forming the Triple Alliance, largely owing to her distrust of France. In 1900 King Humbert was assassinated by an anarchist, and was succeeded by his only son, Victor Emmanuel III. At the beginning of the new century I. entered upon more friendly relations with France, the Triple Alliance being still maintained. In the dissensions in Morocco, in 1906-11 she gave her support to France against Germany while France acquiesced in It. ambitions in Tripoli. In Sept. 1911 war broke out between I. and Turkey in connection with the rights and privileges of It. subjects in Tripoli. In Nov. of the same year the It. gov. formally proclaimed the annexation of Tripoli and Cyrenaica, which was ratified by Turkey in the treaty of Onchi in Oct. 1912. The Ottoman Empire had hastened to conclude peace with I. as Turkish supremacy was threatened in the Balkans by the Balkan Alliance. The triumph of the allies in the Balkan Wars (q.v.) was a setback to Austro-Ger. policy, which favoured Turkey, but despite I.'s sympathy for the Balkan allies, I. was again drawn into the Triple Alliance with Germany and Austria for a further period, renewed on Dec. 7, 1912. Austria, however, disregarded the terms of her treaty with I. in pursuing her Balkan policy of aggression against Serbia. I. was unable to intervene, being occupied in 1914 with a revolutionary movement which expressed itself in strikes and rioting. These difficulties were encountered by Salandra, who became premier in March 1914 on the resignation of (Hollitt) (q.v.), who had been a virtual dictator for eleven years. After the declaration of war between the Entente and the Central Powers, I. maintained her neutrality, deeming herself not bound by the Triple Alliance, the terms of which Austria had broken by her sole action against Serbia. As the price of continued neutrality, I. demanded concessions from Austria in the Trentino, Istria, Dalmatia, and Albania. Although Germany favoured these claims, Austria rejected all but a small extension of the It. frontier. Baron Sonnino, It. Foreign Minister, then opened negotiations with the Entente, and finally on April 26, 1915, the treaty of London was signed, by which fulfilment of I.'s territorial claims was

promised together with an immediate loan of 250,000,000. (See also AUSTRIA-HUNGARY.) On May 23, 1915, I. declared war on Austria-Hungary. The It. army was poorly equipped, while for the main offensive launched on the Isonzo and for the operations in the Isonzo and for the operations in the Trentino only some 100,000 men were available. (See ISONZO; ITALIAN FRONT, FIRST WORLD WAR CAMPAIGN ON; WAR, FIRST WORLD.) Not until 1916 did I. become actively at war with Germany. As a result of Sonnino's foreign policy the unity and independence of Albania were proclaimed under the protection of I., while in April 1917 the Treaty of St. Jean-de-Maurienne was concluded with France and England, delimiting I.'s share in the partition of Asia Minor. The treaty was confirmed at an Allied Conference held in London in Aug., and, following discussions there, an offensive was started on the It. front which resulted in the disaster of Caporetto (q.v.) in Oct. This defeat stiffened It. resistance and in June, 1918 the reorganised It. army defeated the Austrians at the battle of the Piave, and in Oct. Austria sued for an armistice. At the end of the struggle the resources of I. were exhausted, her losses in men amounted to half a million, and her great effort had reduced the country to a worse state than that of her allies. The fact, however, that for I. the war ended with a military victory encouraged a Nationalist movement, opposed to more moderate opinion in favour of an entente between I. and the succession states. The Nationalists demanded Fiume as well as the territorial gains promised in the treaty of London. (See FIUME.) The Adriatic problem (see ADRIATIC QUESTION) was unsolved and It. dissatisfaction with the Peace Treaty caused the resignation of Orlando, who was succeeded by Nitti. Domestic unrest in I. was heightened by the feeling aroused over the Allied intervention in Fiume, following the *coup d'état* of D'Annunzio (q.v.) who on Sept. 12, 1919, occupied the city. The Adriatic Question was settled tentatively by the treaty of Rapallo (q.v.), whereby I. surrendered the Dalmatian coast but secured sovereignty over Zara (q.v.), while Fiume was made an independent state. It remained for Mussolini to reach a definitive settlement, known as the treaty of Rome, Jan. 1924, whereby Yugoslavia exercised control over Port Barco and the Delta and I. over Fiume. There also followed the Nettuno Commercial Agreements, but these were not ratified by the Yugo-Slav gov. until 1928.

Benito Mussolini (q.v.) came into power in 1922 from being the leader of the *Fasci di Combattimento*, first organised by him in 1919. (See FASCISM.) In the belief that I.'s ills were due to Socialist propaganda, the Fascist organisation was created for the purpose of suppressing socialism, and between it and the various Socialist organisations a ruthless struggle ensued, lasting a year. In Nov. 1921 the Fascists were reorganised into a political party and returned thirty members to Parliament, allying themselves with the

Nationalists. A conflict with the gov. became inevitable. In a speech on Sept. 29, Mussolini proclaimed his allegiance to the idea of monarchy, and the Fascist march on Rome was organised. The Fascist columns reached Rome on Oct. 30, the same day as Mussolini arrived from Milan in response to a royal summons. He at once formed a cabinet in which he combined the premiership with the Ministries of foreign affairs and the interior. Gen. Diaz became minister of war and Adm. Thaon di Revel of marine. At the elections held in April 1924 the Fascists gained a majority of 1,758,521 out of a total of some 7½ million votes. Mussolini retained the form of parl. gov., and there was, at first, an organised Opposition which hoped to oust Mussolini on the strength of the anti-Fascist feeling aroused by the murder of the Socialist, Matteotti. Mussolini remained proof against the Opposition, which combined rigid constitutionalists with anarchic anti-monarchists. In Rom. fashion the Opposition withdrew on to the Aventine, but this gesture was unavailing. There remained only the opposition of the three former premiers—Orlando who retired from active politics; Salandra, who was elevated to the Senate; and Giolitti, who died in July 1928. In domestic affairs the Fascist Gov. set the country to work, re-established the eight-hour day, and developed the policy of organising labour into syndicates, which were a species of trades unions, including both employers and workers, and under state supervision.

In foreign affairs, I. successfully encountered many difficulties—with Yugoslavia over Fiume (see above); with Greece over the murder of Gen. Tellini of the Albanian Frontier Commission, followed by the It. occupation of Corfu; with France over the treatment of It. minorities in France and Tunisia, with Turkey over Turkish fears of an It. annexation of Anatolia. These problems were eventually solved and concluded by a series of pacts—that with Greece on Sept. 23, 1928, with France on Dec. 3, 1927, and with Turkey June 1, 1928, while an Italo-Albanian alliance was concluded on Nov. 22, 1927, and a commercial treaty with Soviet Russia had been in existence since Feb. 1924. I. was also a signatory to the Locarno Treaties (q.r.).

A rapid increase in pop., coupled with a dearth of raw materials, led I. along the road of imperialism. Fascist policy tended to even greater aggressiveness, notably in rivalry with France, both in naval construction and in agitation for the revision of the Versailles Treaty. But partly owing to France's then dominating position in Europe and Mussolini's dispute with the Vatican over jurisdiction in the educational sphere, the dictator was obliged to play the rôle of protagonist in the movement for a limitation of armaments and European security. But five years later, Mussolini's aggressive policy towards Ethiopia sowed the seeds of a new European conflagration, besides menacing the whole existence of the League of Nations. Notwithstanding the existence

of various treaties and conventions guaranteeing the integrity of Abyssinia, Mussolini announced his intention of annexing the country and, by May, 1936, the It. forces were in occupation of the Abyssinian cap. (see ITALO-ABYSSINIAN WAR, 1935-36). Thus, in addition to the great ters. conquered in 1911, vast new regions were added in 1936; yet the number of Its. settled in E. Africa scarcely ever exceeded 30,000. The League of Nations considered collective action against I., but the idea was eventually abandoned. As a consequence the various European nations agreed to recognise officially the It. conquest of Abyssinia, and in 1938 as a prerequisite to recognition Great Britain entered into an agreement with I. designed to prevent It. aspiration in Africa and It. support of Gen. Franco in the Sp. Civil war (q.r.) from becoming a source of open contention between the two countries. The agreement was not, however, put into effect until after the Munich Pact when Mussolini's prestige rose as a result of his part in the settlement (see EUROPE—History during the Second World War). This event strengthened the ties between I. and Germany even though the tier. annexation of Austria earlier in 1938 had appeared to frustrate Mussolini's ambition of achieving a dominant position in S.E. Europe. I.'s acquiescence in the annexation nullified the Franco-It. Pact of 1935 which was designed not only to regulate relations in Africa but also to preserve the independence of Austria. Later in the year (1938) the pact was formally denounced as a hostile gesture towards France whilst It. claims were launched for Djibouti, Tunis, Corsica, and Nice. Mussolini's aggressive intentions became more manifest while at home his autocratic position was strengthened by the abolition of the Chamber of Deputies. In its place a Chamber of Fasci and Corporations was set up, having 800 members from the National Council of the Fascist Party and the National Council of Corporations, nominated by Mussolini. The gov. had the right to promulgate decrees with the force of law, which were then placed before the chamber. The chamber dealt with constitutional laws, budget estimates and also any matters previously authorised by Mussolini to be so dealt with. The real ruling authority was the *Gran Consiglio del Fascismo* (Fascist Grand Council), which was composed of the quadrumviri of the March to Rome, appointed for an indefinite period, a certain number of members (ministers and other high dignitaries) appointed for as long as they held their offices, and an indeterminate number of members appointed for three years by the head of the gov.

On April 7, 1939, It. troops invaded Albania. King Zog fled, and the country was occupied, King Victor Emmanuel III. becoming also king of Albania. At the same time as his Albanian adventure, Mussolini was at pains to allay Gk. fears. His endeavour was to attach the various Balkan countries to I. by diplomatic ties and to frustrate the possibility of Soviet



action of the Carpathians. The attempt to set up I as a Balkan protagonist was part of the policy of non belligerency which Mussolini adopted on the outbreak of the Second World War in 1939. He was accordingly thanked publicly by Hitler for his diplomatic and political support and released from military obligations. Nevertheless, the following year with the decline of allied fortunes in the W, Mussolini became convinced of Germany's victory and on June 10 declared war on France and Great Britain. This action was preceded by the breaking off of commercial relations and the rejection

Germany, however, succeeded in retrieving its fortunes in both N. Africa and the Balkans and the reflected prestige helped to maintain the Fascist regime in I which fell more and more under the control of Germany.

I was associated with Germany in the defeat of Yugoslavia and gained some territory on the Dalmatian coast. A new state of Croatia was formed with the It duke of Spalato as nominal king. I also provided an occupying force for Greece. By June 1 I was at war with Russia and by the end of the year with the U.S.A. I's economic situation deteriorated and her



NAPLES AND VESUVIUS

(Continued from page 666)

of Amer efforts towards peaceful intervention. The move was unpopular among the It people the more so as the collapse of France did not bring the war to an end. Economic conditions in I became increasingly more serious. In Oct I launched an attack on Greece but the stout resistance maintained by the Gks caused the campaign to linger on through the winter with little success for the Its. Moreover, the It navy was severely crippled by the attack which the R.A.F. made on the naval base of Taranto (Nov. 14, 1940). Other events parallel with the lack of success in Albania where an It army was routed by the Gks on March 9, 1941, were the loss of the prov. of Cyrenaica (see AFRICA NORTH SECOND WORLD WAR CAMPAIGNS IN), and the successful revolt of the Abyssinians which aided by Brit arms resulted in the loss of Eritrea (March 27) and the fall of Addis Ababa (April 5) (see ITALIAN EAST AFRICA, SECOND WORLD WAR CAMPAIGNS IN).

Industry was entirely tied to Germany's war machine. Inflation became a serious danger which Mussolini attempted to avert by drastic cuts in public expenditure. With Ger help efforts were made to strengthen the hold of the Fascist Party which withstood Mr. Churchill's appeal (Nov. 1942) for I to make peace with the Allies. The answer to this was a further agreement with Germany to intensify the collaboration of the two countries. At the end of the year I occupied Nice and Corsica at the same time as the Germans moved into S. France.

The year 1943 (see ITALIAN FRONT SECOND WORLD WAR CAMPAIGNS IN) saw the fall of Mussolini and an It surrender to the Allies. After the allied invasion of Sicily, Mussolini made a last bid to prepare the mainland of I against invasion and to ensure the loyalty of the Fascist Party by excluding several leading members from the gov., including Count Grandi. At this time also Count Ciano,

Mussolini's son-in-law, who had been Foreign Minister since 1936, was appointed to the lesser post of ambas. to the Vatican. Dissension within the Fascist Party, however, broke into open revolt when Mussolini, after two meetings with Hitler in July, was unable to obtain a promise of adequate Ger. support against the coming invasion. By order of the king Mussolini was arrested, and Marshal Badoglio was called upon to form a gov. He at once put out peace feelers while at the same time publicly proclaiming the continuation of the war. A secret armistice was agreed while the Gers., in anticipation of some such move, tightened their grip in N. I. and also occupied the Rome airfields. On Sept. 8 following the Allied landing at Salerno the armistice was declared. Badoglio set up his gov. in Brit. occupied ter. and on Oct. 11 I. declared war on Germany. The king was likewise maintained by allied authority. In the N., on the other hand, Mussolini having been rescued from allied hands by Hitler's emissaries attempted to set up a republican Fascist régime. He revenged himself on those of his former supporters who had betrayed him but were now in his power. Among them were Count Ciano and Marshal de Bono who were tried and shot.

In S. I. there was a movement against the monarchy headed by the Liberal leader Count Sforza and the aged philosopher Benedetto Croce, and this found expression at a meeting of the Council of National Liberation held at Bari in Jan. 1944. The king promised to retire as soon as the Ger. occupation of Rome was ended. In April Badoglio formed a new gov. to include Count Sforza, Croce, and the Communist leader, Signor Togliatti. In June the allied armies entered Rome amid a popular welcome, and on June 5 King Victor Emmanuel retired in favour of his son, Prince Umberto. He did not, however, abdicate. Badoglio resigned, and Signor Bonomi (q.v.) an elder statesman from the days before Fascism, formed a new gov. With an It. Gov. in Rome most of the occupied areas of S. I. were handed over to It. control, and the gov. was recognised diplomatically by the United Nations.

On April 27, 1945, Mussolini with twelve of his cabinet was shot by members of the Partisan Movement which was resisting the Fascists in N. I. A few days later, May 2, the Ger. army in I. surrendered, and the liberation of I. was completed (see ITALIAN FRONT, SECOND WORLD WAR CAMPAIGNS ON). Bonomi, who considered his interim task now at an end, resigned, and was succeeded by Signor Parri, a leader of the Partisans, who formed a coalition gov. with the Socialist leader, Nenni, and the Liberal leader, Brosio, as vice-premiers while Togliatti became minister of Justice. A consultative assembly was set up, and local elections were held at the end of the year. Parri resigned in Nov., and a new gov. combining six parties was formed by de Gasperi. By this time the Allied Military Gov. had handed over to the It. Gov. the

control of all ter. except Venezia Giulia and the Udine prov., while the economic situation was eased by supplies which reached I. from foreign sources through U.N.R.R.A.

On May 9, 1946, King Victor Emmanuel formally abdicated, a move which may have been designed to breathe new life into the monarchy. In spite of the fact that it had been decided to hold a nation-wide referendum on the subject of the monarchy in June, Prince Umberto, who had been acting as Lieutenant-General of the realm, was crowned king as Umberto II. A referendum was, however, held, and the result was a vote of 12,718,000 for a republic against 10,719,000 for the continuation of the monarchy. King Umberto at first disputed the decision, but on June 13 he left Rome. On June 18 the Court of Cassation upheld the result of the referendum, thus bringing to an end the reign of the House of Savoy.

Elections were held for the Constituent Assembly which resulted in a gain of 207 seats for the Christian Democratic Party, 115 for the Socialists, and 101 for the Communists out of a total of 556. The Constituent Assembly met on June 25 and proclaimed a republic, electing Enrico de Nicola as President. De Gasperi continued as premier of a reconstructed coalition gov., the first for twenty-five years to consist of deputies freely elected. Eight members of the gov. belonged to the Christian Democratic Party, four were Socialists, four Communists, two Republican, and one Liberal.

The first event which confronted the new republican gov. was the Peace Treaty with the Allies, the draft of which was pub. on June 30, 1946, as drawn up in Paris by the Council of Foreign Ministers, representing Great Britain, U.S.A., France, and Russia. The treaty was signed on Feb. 10 the following year, but the It. gov. at the time of signing registered a protest at the terms of the treaty while affirming they would be loyally met. The treaty was an occasion of national mourning, and the terms whereby Istria, Fiume, and ter. E. of the Isonzo were ceded to Yugoslavia (with the exception of the newly created Free Ter. of Trieste) were considered a sad blow to I. while they did not satisfy Yugoslav ambitions. The chief among other conditions were that the Tenda-Briga area in the Maritime Alps was ceded to France, and the Dodecanese Is. to Greece while I. also lost her colonies in Africa and agreed to respect the independence of Ethiopia. I. agreed to pay reparations over seven years, amounting to 100 million dollars to U.S.S.R., 125 million to Yugoslavia, 105 million to Greece, 25 million to Ethiopia, and 5 million to Albania. Provisions were also made for the demilitarisation of frontiers and of is. in the Mediterranean, and for the limitation of armed forces.

De Gasperi at the head of a new coalition gov. (Jan. 22, 1947) weathered the storm created by the peace treaty. An appeal for revision was, however, made to the United Nations. The gov. alliance

between the Catholics (Christian Democratic Party) and the Communists reflected the uneasy state of equilibrium maintained in the country two years after the end of the war. Shortage of raw materials and other economic difficulties were additional causes of unrest.

The withdrawal of left wing support overthrew the coalition gov. in May, but the following month de Gasperi formed a further gov. dependent mainly on the Christian Democrats. The Constituent Assembly, due to dissolve on June 21, prolonged its own life until the end of the year, thus automatically postponing further elections, and it was in conditions of considerable political uncertainty that the Assembly addressed itself to its prime task of framing a constitution. See *Constitution* above. While the communists still held a place in the gov. they tried for purposes of their own, to introduce members of their movement into the police force. Since they were manœuvred out of the gov. largely by De Gasperi, the communist element in the State's service has been fairly thoroughly weeded out. But at least nine out of every ten civil servants who lost their jobs because of their relations with fascism were reinstated. They were never expurgated in the strict sense of the term, because there was no hard and fast rule. Roughly, a distinction was drawn at the time between those civil servants who followed Mussolini into N. Italy after the liberation of Rome and those who stayed behind, but it was a distinction which could not be maintained for ever. The undoubted undertone of fascist sympathy, however, that prevailed in I was still sentimental rather than political and the small aggressive political party of the neo fascists, known as the Social Movement made only slow progress. All other right wing political groups were virtually eclipsed by the result of the elections of April (1948), when the Christian Democrats were given an overwhelming mandate. The Christian Democrats are not in the abstract, right wing though in the context of present day It. politics they were inescapably on the right as champions of the church and the property owner against the communists. The party officially demonstrated its liberal position by allying itself with the liberals on the right hand and with the republicans and independent socialists on the left. The communist opposition used the trade union movement as its main weapon against the gov. and since the small anti communist minority in the movement coalesced in 1949, to form its own so called free trade union, the main organisation was almost entirely in the hands of the communists.

I. has about 200,000 inhab. who have no love for I. These are the Ger. speaking people who live in the northernmost prov. of Bolzano, bordering on Swit. (land and Austria). Petitions demanding a severance of ties with I. were sent to the Paris conference of 1946. Some of the petitioners hoped for an independent Tyrolean State, others called for reunion with

Austria. In the result Grüber, the Austrian foreign minister and De Gasperi, the It. Prime Minister, signed an agreement between themselves, at Paris, Grüber acknowledging the Brenner frontier, De Gasperi, in return, promising local self gov. or autonomy within the frame work of the It. State for the prov. of Bolzano and the few mixed language com. in the S. prov. of Trento. This agreement was highly unpopular in both I. and Austria, both the signatories being accused of signing away a national birth right. Under the statute eventually drafted the new autonomous region was made to include Bolzano and the whole of the S. It. speaking prov. of Trento. Under this scheme the It. felt that, though the Ger. speaking elements would get a majority in Bolzano prov., they had ensured a safe It. speaking majority in the elected regional council. But both sides had reckoned without those inhab. of Trento who, although they speak I., are politically in sympathy with the Tyrolese and these influenced the result of the election (Nov. 28, 1948) which gave the Volkspartei, or party of the Ger. speaking people of Bolzano, and the Christian Democrats or prin. It. party seventeen seats each on the council.

*Language and Literature*—It is one of the Romance or Neo Lat. languages and is a sister tongue of Fr., Sp., Portuguese, Rumanian, and Provencal. It is naturally more closely connected than any of these with Lat., the language of the Romans. The influence of the written speech of Virgil, Cicero, and Horace lingering for long in the peninsula. Its grammar is a simplification of Lat. grammar, but the popular spoken Lat. of the rustic played a very important part in the evolution of the It. vocabulary. It is divided into very many dialects and the pronunciation of similar words differs very greatly throughout the country. The standard literary and political speech is the Tuscan dialect which came into prominence during the fourteenth century, when it was employed by Dante and his contemporaries. For a classification and study of the various It. dialects consult N. Carr, *Saggio sulla storia della lingua e dei dialetti d'Italia*, 1782; S. de L. Morandi, *La nua della lingua italiana* (3 vols.), 1883; L. 12, G. I. Ascoli, *Il nuovo glottologico italiano*, 1873 et seq.; R. Fornaciari, *Grammatica storica della lingua italiana*, 1922; P. Petrocchi, *Vocabolario della lingua italiana*, 1981 ff., which is wholly in It. the It.-Eng. Ling. It. Dictionary by A. H. Edgerton, 1902 and B. Migliorini, *Italiani contemporanei* (3rd ed.), 1943.

No very early documents of It. literature exist, for the tradition of writing in Lat. lingered long, and, moreover, Lat. did not differ so much from the vulgar speech as to be unintelligible. The influence of the Teutonic invaders upon the speech of the race they subjected does not appear to have been very great. A much more powerful and lasting influence was that of the Fr. and Provencal troubadours who wandered across the Alps as early as the eleventh century and sang their songs

of love and war throughout the peninsula. In the early thirteenth century there grew up round the court of Frederick II. (1194-1250) in Sicily an It. school of poets who closely imitated the Provençal lyrics both in style and matter. Chief among them were Frederick himself, and his son Enzo (d. 1272), Piero delle Vigne (d. 1219), and Giacomo da Lentini. But their art was wholly imitative, conventional artificial, and consequently short lived. In the latter part of the thirteenth century the Tuscan tongue came into prominence. Tuscany had this advantage over the rest that its *lingua volgare*, the familiar speech of the rustic, was more generally polished so as to resemble the poetic diction of other dialects. The Siculo-Provençal poetry was imitated by a small Tuscan school, which, with Guittone d'Arezzo (1215-91) at its head, included the humorists and satirists Folgore of San Gimignano, Cene della Chitarra, and Rustico di Filippo. Guittone abandoned the Provençal chivalric forms, and wrote political and didactic poems. His great pupil, Guido Guinicelli (d. 1276), wrote philosophical lyrics, which are intellectual rather than imaginative, but mark a great development in the hist. of It. poetry. A contemporary of his was Brunetto Latini (d. 1291), the friend and master of Dante. His *Treasure* was obviously influenced by the allegorical poems, such as *Le Roman de la Rose*. Under the same influence was Francesco da Barberino (1261-1343). In Umbria the development of poetry was largely due to the religious movement brought about by the estab. of the Franciscan and Dominican orders. To St. Francis of Assisi (1182-1226) has been attributed the *Cantico del Sole*, a hymn written in rhythmical prose. The greatest exponents of religious poetry at this time were Jacopo dei Benedetti da Todi and Raniero Fasani Fasani's *Laudi* and similar liturgical compositions are the earliest form of It. religious drama. The earliest specimen of It. prose dates from the middle of the thirteenth century. The *Cento Novelle Antiche* was probably written by a Florentine. It is a collection of short tales drawn from Oriental, Gk., Trojan, and medieval sources. Francesco Barberino included similar stories in his *Del Reggimento e dei costumi delle donne*. The letters of Fra Guittone d'Arezzo, on moral and religious subjects, are interesting specimens of the *lingua volgare*. In addition we have a number of trans. and adaptations of Fr. romances and Lat. historical ascetic treatises an original scientific work on astronomy and geography called *Composizione del mondo*, by Ristoro d'Arezzo; and treatises on government, *De regimine principum*, by Egidio Colonna who wrote in the Venetian dialect.

The fourteenth century, called *Trecento*, is the age of a mighty trio—Dante, Petrarch, and Boccaccio. Hitherto, poets and writers had experimented in various dialects, and Tuscan had been proved to surpass the others. The great writers of the fourteenth century were all Tuscans, and by their use of it made the

Tuscan dialect the acknowledged literary medium of speech in It. for all time. Dante's immediate predecessors in lyric poetry were Guido Cavalcanti, whose *Sulla natura d'amore* is a poem on the metaphysics of love, Cino da Pistoja, and Lapo Giammi. To this school belonged Dante Alighieri himself (1265-1321). His work culminated in the *Divina Commedia*, a transcendental poem of incomparable beauty (see DANTE). Francesco Petrarca (1304-71) was at the time regarded as the dictator of literature, and his love for Laura has remained as an inspiration to all succeeding poets of every nationality (see PETRARCH). But he must be studied not only as the writer of beautiful love-lyrics, but also as the first humanist in It., the forerunner of the revival distinguished by an enthusiastic study of ant. classic literature. Giovanni Boccaccio (1313-75) had the same zeal for research into the works of antiquity, as is testified by his encyclopaedic works in Lat. on diverse subjects—*De genealogia deorum*, *De casibus virorum illustrium*, *De claris mulieribus*, etc. His narrative poems, *Teseide*, *Filostrato*, and *Amorosa Fiama*, are far more successful than his lyrics, while his *Amorosa Fiama* shows the influence of Dante. His fame rests mainly on the *Decamerone*, a collection of a hundred novellas, which are arranged and told with the skill of an artist who is at the same time an observant and sympathetic man of the world (see BOCCACCIO).

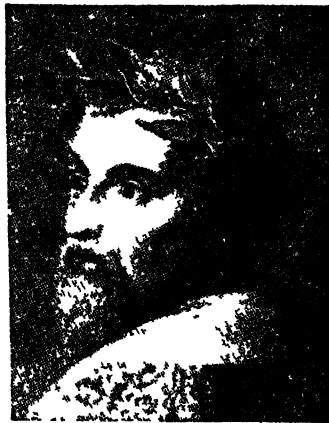
These three great writers had many imitators. Among Dante's followers must be numbered Francesco Stabile, called Cecco d'Ascoli (1269-1327; *L'Acerba*), Fausto degli Uberti (*Dittamando*), Federigo Frezzi (*Quadrifoglio*), whose works are chiefly of historical interest to the student. Novel writing had already attained great popularity in France and other countries. The example set by Boccaccio was now closely followed by Giovanni Fiorentino (*Petrarche*, 1378), Franco Sacchetti (d. 1400), a moral writer on immoral subjects, and Giovanni Lercambi di Lucca (1347-1424). The prose literature of the time is chiefly represented by the tales and novels of these and other men, and chronicle is very important as being the first attempt at historical writing. The greatest historian of the time was undoubtedly Giovanni Villani, who wrote a chronicle of his native city, Florence, including a review of the world's hist. from the Tower of Babel down to 1348. Travel literature is represented by the *Travels of Marco Polo*, and the religious and mystic sentiment of the time is expressed in the letters of St. Catherine of Siena (1347-80) and in the *Fioretti*, a collection of the words and deeds of St. Francis. During the period succeeding the death of Dante, Petrarca, and Boccaccio, there was a dearth of great writers. This may be accounted for partly by the over estimation of ant. Gk. and Lat. writers and the consequent under estimation of works in the vulgar tongue. Among those who ventured still to write in It. rather than in Lat. must be numbered Leon Battista Alberti (1407-72), with his *Della Famiglia*, and Matteo

Palmieri (1406-75), with his *Della Vita Civile*. Works of a more popular kind were the prose romances *I reali di Francia* and *Guerino il Meschino* of Andrea Barberino (1372-1431), the burlesque topical sonetti *caudati* of the Florentine, Domenico di Giovanni (d. 1448), surnamed Il Burlesello, and the *rappresentazioni sacre*, or religious dramas, which corresponded in some ways to the miracle and mystery plays of England.

In the middle of the fifteenth century two great events occurred which were of vast importance in the literary hist. of every European country. One was the fall of Constantinople in 1453, which drove many Gk. scholars into W. Europe, the other was the invention of printing, which did not affect I. till 1464. In 1447 the erudite founder of the Vatican Library was made Pope Nicholas V, an election which gave great impetus to the study of antiquity. Another event which influenced lt. literary hist. was the foundation of the Rom. Academy and the Florentine Platonic Academy, the latter of which made the important declaration that I. was equal in literary merit to Lat. Moreover, in the great centres of literary activity there were growing up young men of genius who became zealous advocates of maintaining the literary traditions of the country. One of these was Lorenzo de' Medici (1448-92), prince, poet, and patron of literature. His works include *Ambra*, an Ovidian allegory; *La Caccia col Falcone*, *La Zeucia di Barberino*, the *Canti Carnascialeschi*, carnival songs of a somewhat licentious character, a number of elegant love poems, besides pastorals and satires. He not merely encouraged, by his personal example, the use of popular literary forms, but he infused into them the culture of the Renaissance. The most distinguished of the men of letters who frequented Lorenzo's court in Florence were Luigi Pulci (1431-97) and Angelo Ambrogini (1454-92), commonly known as Politian. To the former we are indebted for the *Morganke Maggore*, a humorous epic in ottava rima, which contains a curious mixture of flippant and irreverent buffoonery, lofty sentiment, and religious fervour. Politian, who was a brilliant classical scholar and philologist as well as a poet, wrote the lyric tragedy *Orfeo*, *Giostra*, a poem on the tournament, and some exquisite *Stanze per la giostra*. Other protégés of Lorenzo were Antonio Manetti (1423-97) and the famous (Giovanni) Savonarola (1452-98). The Renaissance of anc. culture was similarly fostered by Ferdinand I at Naples. Jacopo Sannazaro (1458-1530) was the first to show that excellent lt. prose could be written outside of Tuscany. His *Arcadia*, a pastoral romance, foreshadowed by Boccaccio's *Ambra*, is classical in its construction of sentences as well as in its setting. It set the fashion for writing in studied poetical prose, and prescribed the rule for all future pastoral romances. A fellow townsman of his was Giovanni Pontano (1426-1503), the founder and head of the Neapolitan Academy and the author of many graceful lyrics and lively satires,

which are unfortunately written in Lat. In Ferrara, the literary centre of the N., Matteo Maria Bolardo, Count of Scandiano (d. 1494), enjoyed great popularity as the author of an unfinished poem, *Orlando Innamorato*, which celebrates deeds famous in old Fr. cycles. The story is original, and though the incidents are ingenious the characters are real people, but the style and diction are lacking in refinement.

The romantic epic, thus for the first time handled with any success by Bolardo, was perfected by Lodovico Ariosto (1474-1533). See ARIOSTO. His *Orlando Furioso* is a sequel to the *Orlando Innamorato*. The works of Ariosto open a new period in the history of lt. literature, a glorious period called by Its. the *Quattrocento*, which is in many respects equal to that of Dante, Petrarch, and Boccaccio. Ariosto



LUDOVICO ARIOSTO

lacked the simple and pleasing naïveté of Bolardo, but possessed greater imaginative insight. Besides the epic he also wrote comedies, satires, lyrics, and some Lat. verse. Another epic writer of the second period of the Renaissance was Giovanni Giorgio Trissino (1478-1550), a native of Vicenza. His *Italia liberata da' Fr.* (pub. 1547-48) is of interest as the first attempt to write lt. epic poetry in blank verse, but it lacks inspiration and falls far behind his tragedy *Sophonisba* (1515). Both Bernardo Tasso (1493-1569) in his *Amadigi* and Luigi Alamanni in *Carone il Corsico* owed much to *Orlando Furioso*. The high seriousness of these poets is even more prominent in the didactic work of Giovanni Rucellai (1475-1525) and Erasmo da Valterasso (1523-93). Side by side with these didactic poets there developed a school of burlesque writers, the chief of whom were Francesco Berni (1497-1535) and Antonio Francesco Grazzini, surnamed Il Lasca (1503-84). The cynicism and lack of morality that

was characteristic of the time is prominent in the work of that crafty but far-sighted statesman, Niccolò Machiavelli (1469-1527). Second to him as a historian is Francesco Guicciardini (1483-1540), who, besides writing of the hist. and gov. of Florence, made a collection of aphorisms for statesmen called *Ricordi politici e civili*. The two chief novelists of the sixteenth century were Matteo Bandello and Anton Francesco Grazzini. Although the former was a Dominican friar, his works reflect the loose manners of the time as much as any of those of his contemporaries. The licentiousness of the It. court was embodied in the infamous Pietro Aretino (1492-1557), whose letters, pub. in Paris in 6 vols. (1609), are an index to the life of the times. His comedies are lively and satiric sketches of contemporary manners. Other comedy writers of high merit are Giovan Maria Cecchi, Machiavelli, and Ariosto, but the greater number of It. playwrights adopted the conventional methods employed by anti. writers of Lat. comedy. During the latter part of the Renaissance a literary controversy took place with regard to the introduction of dialect forms in literature. In the end the 'purists,' who maintained the Tuscan of the fourteenth century to be the literary tongue, prevailed. Chief among them was the erudite Cardinal Bembo (1470-1547) who came to be regarded as the dictator in all matters of literary taste. Other writers of pure and elegant prose were the Marturan Castiglione (1478-1529) and the Tuscan della Casa (1503-36).

The work of Torquato Tasso (1544-95) brings this period to a close, and forms a link between it and the next. His early writings included *Rinaldo* and *Aminta*, a beautiful pastoral play, but his life work was the *Gerusalemme Liberata*, a poem on a heroic scale, in which is expressed the profundity of his feeling and the deep melancholy of his soul.

The period of decadence which followed the glorious era of the Renaissance may be traced back to the middle of the sixteenth century. The writers of the *Seicentismo* were devoid of imagination, of passion or sentiment. The inspiration of the Revival of Letters left them cold and barren, and their work is distinguished by its exaggeration, bombast, and artificiality. The fashion for this rapid manner of writing was set by Giovan Battista Marino (1569-1625), who, in spite of his far-fetched conceits and extravagant metaphors, showed a vigorous imagination in his poem, *L'Adone*. His manner was mimicked by lesser men, and the style which came into vogue was called after him *Marinismo*. Another characteristic of the *Seicentismo* is seen in Gabriello Chiabrera of Savona (1552-1637) and his followers, Fulvio Testi of Ferrara (1598-1646), Francesco Redi of Arezzo (1626-88), and Alessandro Guidi, who imitated Pindaric and other classical metres, and showed themselves possessed of a real lyric gift. The pastoral drama, essentially an artificial production, became extremely popular, the chief examples of the kind being the *Pastor Fido* of Guarini (1587-1612),

and the *Dafne* of Rinuccini, which was set to music by Peri and Caccini. Vincenzo Filicaja (1612-1707) is noteworthy as being one of the few writers of this age with real sentiment. His songs have a true patriotic ring, but even they are expressed in an exaggerated form. A reaction against the extravagance of metaphor and the affectation of an exuberant, passionate style became evident, and took definite form in the establishment by Giovan Maria Crescimbeni and Gian Vincenzo Gravina of the 'Academy of Arcadia' (1690), which advocated a return to pastoral simplicity. The most noted of the 'Arcadians' were Innocenzo Frugoni, Felice Zappi, and Paolo Rolli. But these would-be reformers still escaped one affectation to fall into another: the effeminacy of their madrigals is no better than the hyperbole of Marino. A healthy sign of revolt against *Marinismo* and Arcadia is seen in the satires of Salvatore Rosa (1615-73), a Neapolitan artist and musician and a forerunner of the eighteenth-century patriot, and in the mock-epics of Alessandro Tassoni (1565-1634), the author of *La Secchia Rapida* and *Filippiche*. But the most durable work of the *Seicentismo* was done by scientists like Galileo Galilei and Eia Paolo Sarpi and thinkers like Giordano Bruno and Tommaso Campanella. The prose of Galileo is distinguished by its precision and vitality.

The *Risorgimento*, or Age of Revival, was also prepared by Giambattista Vico, who, in his *Scienza nuova* investigated the universal laws of hist. which had governed the progress of the human race. Lodovico Antonio Muratori, Scipione Mattei of Verona, and Apostolo Zeno applied themselves industriously to historical research, and Count Giovanni Maria Mazzuchelli of Brescia and Girolamo Tiraboschi showed an interest in the sources and development of literature. Independent criticism found a public platform in the reviews recently established on the model of the Eng. *Spectator* and *Fuller*. Chief of these were the  *Osservatore* and *Gazzetta veneta* of Gaspare Gozzi (1713-86) and the *Frustra letteraria*, in which Giuseppe Baretti of Turin (1718-89) gave vent to his satirical humour. Most conspicuous among the literary reformers of the *Risorgimento* was Giuseppe Palmi (1729-99), a Lombard poet, who ridiculed the frivolity and self-indulgence of the society of the time in *Del Giorno*. Carlo Goldoni (1707-93) may be regarded as the dramatic reformer of the eighteenth century. With Molière as his master, he studied the people living about him and supplanted the *commedia dell'arte* by comedies of character.

The educated classes in I. were at this time filled with a hope of freedom from the foreign yoke. The idea of liberty they found best expressed in the writings of anti. Gk. and Lat. writers on whose style they tried to model their own. Vittorio Alfieri (1749-1803) made a determined effort to establish a national drama. His tragedies, which are almost invariably based on incidents in Gk. or Rom. hist., may lack artistic finish, but they are inspired by a noble patriotic spirit. The

chief literary fighters for national liberty at this time followed Alfieri in a return to classic models. Ugo Foscolo (1778-1827) passionately advocated the political cause in *Letters to Jacopo Ortis*, *Sepulchri*, and *Ortis*, which are somewhat marred by his gargantuan rhetoric. Foscolo should also be noted as a literary critic of high merit. His most important work as such is *Dell'origine e dell'ufficio della letteratura*; he also wrote textual criticisms of Dante and Boccaccio. Other classicists of note are Vincenzo Monti (1754-1828), who attacked the Papacy in *Superstizione* and *Fanatismo*, and expressed his fears for his country in *Bassvilliana* and *Feromade*; Gian Battista B. Niccolini (1782-1861), who wrote tragedies on political subjects, as e.g. *Antonio Foscarini* and *Ludovico il Moro*; Ippolito Pindemonte (1773-1828), a dramatic poet and Leopardi (1798-1837) the greatest lyric since the Tricento. Indignation against Napoleon's aggressive policy roused Carlo Porta (1766-1837) to write a list of his country during the years 1789-1814. Other historians like him, distinguished by their patriotism and by their classic methods, are Cesare Balbo (1789-1853), and Gino Capponi (1792-1876).

The modern literature of I may be said to have arisen out of the romantic movement which started in Milan towards the end of the eighteenth century. The chief characteristics of the new movement were a renewed study in the *aurea trientista*, the classic writers of the fourteenth century, and in all medieval things, and a keen interest in the works of such men as Goethe and Byron, who represented a similar movement in Germany and England. The organ of the new school was the *Conciliatore*, a journal estab. in Milan in 1818, and its leader was Alessandro Manzoni (1785-1873), the author of a great historical novel, *Promessi Sposi*, which owes much to Sir Walter Scott. Domenico Guerrazzi (1804-74) and Massimo d'Azeglio (1798-1865) were successful exponents of the historical novel. Giuseppe Giusti (1809-50), a Tuscan, won great popularity with his clever epigrammatic satires. Among the political revolutionists, who were at the same time powerful literary advocates of the cause of liberty, should be noted Vincenzo Gioberti (1801-52), who is also known by his philosophical work, *Primato morale e civile degli Italiani*; Niccolò Tommaseo (1802-74), and Giuseppe Mazzini (1808-72).

Since 1850 politics have had less influence on Italian literature. The transition between the Age of Revival, which roughly speaking, covered the years 1750-1850, and the age of King Humbert is marked by the patriotic poems, *Storici politici*, of Francesco dall' Ongaro (1808-73). The traditions of the romantic school were maintained in the poems of Giovanni Prati (1816-84), but the greatest Italian poet of the post-Risorgimento, Giosuè Carducci, set on one side the outworn methods of the Romantics, and sought his inspiration in the national literature of an earlier time. The chief followers of his classical manner are Guido

Mazzoni and Giovanni Marradi. Other poets of distinction are Giovanni Pascoli, Arturo Graf, Gino Guerrini, and Enrico Panzachi. The drama, on the whole, became more realistic, the chief exponent of modern methods being Gerolamo Rovetta and Giuseppe Giacosa. Antonio Fogazzaro (1842-1910) won a great reputation as a writer of mystic and philosophical novels with an historical setting. The influence of the realistic movement is seen in the novels of Giovanni Verga. Edmondo de Amicis (1846-1908), known by his novels and travels, is one of the most popular of writers. The chief women novelists are Grazia Deledda and Matilde Serao, while Vittoria Aganoor, Annie Vivanti and Ada Negri are women poets of repute. Gabriele d'Annunzio (q.v.) is a brilliant and versatile writer—a dramatist, poet, novelist, and critic. His genius is undeniable but many critics complain of the licentiousness and pessimism of his thought. *Ser D'Annunzio*. Lutherism in literature was linked to that in painting, and indeed showed its influence. Its leader was Marinetti, together with Soffici Papini and Ungaretti in criticism and philosophy the outstanding figures are Benedetto Croce and Giovanni Gentile, while Pasquale Villari's books on Machiavelli and Savonarola have become classics. Croce's work has been the direct cause of the revival of aesthetic criticism throughout Europe, and he is also a philosopher and historian. With the dramatist, Bracco, he is one of the few prominent Italian authors who are out of sympathy with the latest ideas. But there is among younger people an inevitable reaction against Croce's characteristic optimism, a reaction which often takes the shape of *esistenzialismo* (Existentialism) and homage to Sartre. More specifically post-1918 literature shows a tendency to exploit its life and the local scene in novel and story—in, for instance, the Sardinian novel of Grazia Deledda, Nobel prizewinner in 1927, or in the satirical but humorous work of Ugo Oletti or of Panzini, Brocchi, Raffaello (alini), and Marino Moretti, who is also a poet of distinction. Other important writers are the novelist Zucca (q.v.), Riccardo Bacchelli whose long novel, *Il Diavolo al Pontelungo*, is descriptive of the Italian anarchist movement and Prof. Borgese (q.v.), who besides being a literary critic, has written a novel, *Lupe*, reflecting the decadence of life after the First World War. Bacchelli's work is linked in a personal and direct way with the traditions of the nineteenth century. He is the most complex and widely cultivated among contemporary Italian novelists. His *Il Piano del Fiume di Lusi* ('The Lament of the Son of Lusi') is an achievement equal if not superior to the work of Thomas Mann in that kind. Montanelli (q.v.) is interesting for having inaugurated a movement for abandoning the pure Italian classicism for an art more general and worldly. This is offset, however, by the enthusiastic Roman revival, encouraged by Fascism and finding expression in such a work as Corradini's drama, *Giulio Cesare*, acted in the

Gk. theatre at Taormina in 1928. With the possible exception of Croce, the Italian writer of the greatest European importance is Luigi Pirandello (q.v.), who exploits a psychological world of half-reality. He is a prolific short-story writer as well as play-wright, and in fact with him the two mediums are not widely dissociated. The Fascist régime, while not seriously deflecting the careers of the older established writers such as Pirandello or Panzini, did not produce any notable literature of its own. The best writing was produced in exile, and the It. socialist, Ignazio Silone, gained European fame with his novel *Fontamara* in 1930. He also wrote a *History of Fascism* in 1934. He returned to I. in 1945. Since the Second World War the only important books of verse have been Eugenio Montale's *Primo verso* (1946), and the complete ed. of Umberto Saba's poetry (1946). These are the major It. poets to-day. Ungaretti, who has recently issued a trans. of Shakespeare's sonnets, is the most notable poet of the previous generation. Alberto Moravia seems to be the It. novelist best known outside his own country. *Agostino*, reputed to be his best book, relates to the disturbance and anxiety with which the discovery of sex afflicts the adolescent — a hackneyed theme which, however, Moravia treats with a kind of lucidity. Equally ruthless is Guido Piovene's *Pietà contro Pietà* ('Pity against Pity') (1946), a novel of contemporary life, crude and subjective, but penetrating. Corrado Alvaro, author of *L'Età Breve* ('The Brief Age') (1947) is a Calabrian novelist who is well known in I. Among contemporary short-story writers the best known are Vitalino Brancati, whose *Il vecchio cogn. strali* ('The Old Man with the Boots') (1911) is a description of prov. Sicilian life under the Fascists; Carlo Cassola and Guglielmo Petroni. The It. Resistance movement, unlike that in France, did not result in any typical literature, though mention may be made of the novel *Uomini e no* ('Men and Not Men') by Elio Vittorini (1945), whose later work, however, has reverted to the manner of Saroyan, and of the autobiographical sketch, *Il Mio granello* ('My Grain of Sand') (1946) by Luciano Boris. Among the many new literary reviews may be mentioned *Angela* (Florence) devoted to English studies, *Mercurio*, and *Il Ponte* — all being post-1945 productions. *Piera Letteraria* is still regarded as the best literary weekly publication. In another sphere It. writing to-day shows intense vigour: historical research, philosophy, art criticism, and philology are flourishing, and works of this kind are the chief merit of It. culture to-day.

**Music** — For early developments connected with Rome as seat of the Christian Church, see the article MUSIC. The important movement known as *Ars nova*, which during the fourteenth century replaced the medieval organum by a polyphonic style with a much wider harmonic and rhythmic range, was largely It. (Florentine) in origin; but the composers

who developed it into a great art were Flemish. It was a Fleming, Adrian Willaert (c. 1480–1562), who, appointed to St. Mark's Cathedral in 1527, founded the important Venetian school of composers. For two centuries Italy had been distinguished more for secular than sacred music, particularly in the field of the popular part-song. This took sev. forms, the *frottola* (Venetian), *villanella*, *ballata* (Eng. ballet), and the canonic *caccia* (Eng. catch), all characterised by harmonic simplicity, lightness of mood and concentration of melody, always a strong feature of It. music. Verse and music were closely integrated, sometimes dancing and instrumental accompaniment were added. The *Laudi Spirituali*, popular hymns influenced by plainsong, originated at Florence in the fourteenth century and later became an important element in oratorio. The union of It. secular song and Flemish polyphony produced a valuable art form in the madrigal, whose style, imitative rather than contrapuntal, was founded on a perfect balance between words and music. Its earliest masters were Flemish, notably Willaert and Lassus, but it was soon taken up by native composers and reached its height in the work of Marenzio (1533–99), Gesualdo (c. 1560–1615) and Monteverdi (1567–1643). A severer method, influenced less by popular song and more by the motet, was cultivated at Rome, first by Costanzo Festa (1490–1545), later by Palestrina (1525–94). Charged by the Pope with the purification of church music, Palestrina evolved a style, compounded of It. lyricism and the solid contrapuntal achievements of the Flemings, that crowns the whole polyphonic period.

The leaders of instrumental music were the Venetians. Venice, the centre of music printing, became in the sixteenth century the hub of European musical life. The earliest surviving lute books, consisting of transcriptions, dances and fantasias, date from 1507–09. The *canzona* and *ricercare*, originating in transcriptions of the Flemish motet, were cultivated by Andrea Gabrieli (c. 1510–86) and developed by Claudio Merulo (1533–1604) and Giovanni Gabrieli (1557–1612) into independent compositions for organ. Another new instrumental form was the *toccata*, in which a genuine keyboard technique became apparent. Among Giovanni Gabrieli's innovations was the use of voices and instruments in antiphonal groups; this arose from the shape of St. Mark's Cathedral, which required the div. of the choir into two parts, each with its own organ. With Frescobaldi (1583–1643) the *ricercare* developed into the modern fugue.

About 1600 Italy produced two new large-scale forms, opera and oratorio. The earliest operas were the work of an aristocratic Florentine group known as the Camerata, chief among whom were Peri (1561–1633) and Caccini (c. 1565–1618). Endeavouring to revive the methods of Gk. tragedy they rejected polyphony and turned to recitative, a change that coincided with the introduction of the figured



bass. Another approach to the stage was through the madrigal; Orazio Vecchi (1550-1605) wrote an early dramatic work in the form of a string of madrigals, and Monteverdi, in whose madrigals the music had become more and more an emotional illustration of the text, turned to opera in 1607. He greatly enriched its orchestral element and range of harmonic expression, which he put to true dramatic use. The ancestor of the oratorio was the medieval morality play, as developed by St. Philip Neri (1515-95) at his oratory in Rome. The first oratorio proper, by Cavallieri (c. 1550-1602), was produced in 1600 with scenery, costumes and dancing. It differed from opera only in its ethical subject. During the seventeenth century both these forms, especially opera, spread throughout Europe, but the It. love of scenic and vocal display caused an increasing emphasis on virtuosity at the expense of dramatic truth and orchestral colour. The operas of Cavalli (1602-76) and Cesti (1623-69) saw the gradual separation of aria from recitative, a process standardised by Alessandro Scarlatti (1660-1723), a great melodist, who established the It. overture, *da capo* aria, *opera buffa* and the two kinds of recitative. He also ejected the chorus, whose part in oratorio however had been extended by Carissimi (1603-74). Another form, coeval with opera and oratorio, reshaped by Carissimi and soon popularised abroad, was the cantata, whether sacred (*da chiesa*) or secular (*da camera*). Opera in the It. style and language continued to dominate the stages of Europe throughout the eighteenth century, aided by the vogue of the male soprano or castrato. The librettos of Metastasio (1698-1782) imposed a still stricter formalism, but the quality of the music declined and the dramatic element all but vanished. Of many It. operatic composers Pergolesi (1710-36) is remembered for his success in *opera buffa*.

The leading It. keyboard composer after Frescobaldi was Pasquini (1637-1710). The great advances made in N. It. in the evolution of the violin family led to an extension of instrumental music parallel with that of opera. It was this age that gave to music many of its familiar It. terms. The *sonata*, originally any piece written for instruments (as opposed to *cantata*, a piece for voices) and more or less synonymous with *canzona* and *sinfonia*, developed like the cantata in two forms: *sonata da chiesa*, derived from the old polyphonic style, and *sonata da camera*, based on popular dance measures. Such works were at first written for sev. instruments, generally of the violin family, but in time were confined to one or two supported by a string bass and continuo (figured bass) on the harpsichord. The great composer of this period was Corelli (1653-1713), who late in life also perfected the *concerto grosso*, an orchestral work in which the main body of instruments was contrasted, after the old antiphonal principle of choral music, with a few (generally three) soloists. From this it was a short step to the solo concerto. Corelli's most important successors were

Geminiani (1687-1762), Vivaldi (c. 1675-1741), a many-sided composer who influenced Bach, and Tartini (1692-1770), who improved the technique of the violin. The pianoforte was invented about 1710 by an It. Bartolomimeo Cristofori (1655-1731), but did not at once become popular, and the greatest It. keyboard composer, Domenico Scarlatti (1685-1757), wrote for the harpsichord. His very varied one-movement sonatas have the greatest artistic and technical importance.

After 1750 It. music lost its hegemony. *Opera buffa* alone retained some vitality in the works of Paisiello (1740-1816) and Cimarosa (1749-1801). A spark of brilliance was supplied by Rossini (1792-1868), who however, like other Its. of his time, left Italy and essayed cosmopolitan romantic opera in Paris. Native melody and vocal virtuosity continued to find expression in the operas of Donizetti (1797-1848) and Bellini (1801-35) and in the early work of Verdi (1813-1901), a dramatic composer of rare genius, who in his later operas achieved a perfect balance between drama and music, thus at last reaching the standards set by Monteverdi. During the late eighties a new type of opera, based partly on Fr. and Ger. models and known as *verismo* from its attempt to reproduce the situations of everyday life, was initiated by Mascagni (1863-1915) and Leoncavallo (1858-1919). But their operas and those of Puccini (1858-1924) a composer of greater refinement, are marred by a search for effect that is too often neither musical nor truly dramatic but melodramatic.

Towards the end of the nineteenth century It. interest in instrumental music, dead for more than a century, was revived by Scaramatti (1841-1911) and Martucci (1856-1909), and their successors have cultivated all the possible forms, both vocal and instrumental. The most important composers are Respighi (1879-1936), best known for his rich orchestral works, Malipiero (b. 1882), Pizzetti (b. 1880), both of whom have adopted a more serious instrumental style, Casella (1883-1947), whose output is eclectic, and Dallapiccola (b. 1904). But Italy has not yet found an operatic successor to Puccini.

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**ART:** see ITALIAN ART; ARCHITECTURE, Italian.

**Italy, British Army in (First World War).** The disastrous It. defeat at Caporetto (q.v.) occurred in Nov. 1917, but before the close of the year the Brit. Gov. sent out five divs. It is undoubted that these reinforcements were a vital moral influence in restoring what seemed a desperate situation. In March 1918 two of these divs. were, however, sent to France in view of the impending Ger. attack on the W. Front. When the Austrian offensive of May 1918 opened the Brit. forces, under the command of Gen. the Earl of Cavan, were disposed on the Asiago Plateau. While the It. were repulsing the enemy in the Adamello passes the Brit. repulsed them on the plateau and both allies took many prisoners and guns. On June 15 the Austrians launched a heavy offensive from Asiago to the sea with 600,000 men, crossing the Piave the same day at Montello and near the mouth. The Brit. forces, which included several battalions of the Royal Fusiliers, played an important part in hurrying the Austrians across the riv. again and involving them in the tremendous defeat of the early autumn, which ended in the armistice with them being signed on Nov. 4. The total number of Brit. forces employed in Italy was about 101,000 combatant and 44,000 non-combatant troops, the maximum strength at any one time being about 90,000 combatant troops. The casualties were, killed and died of wounds, 1057, missing and prisoners, 670, and wounded, 1971.

**Italy Star.** Brit. military decoration, instituted in 1915 for entry into operational service on land in Sicily or in Italy at any time during the campaign there from capture of Pantelleria on June 11, 1943, and until May 8, 1945. The ribbon is in It. colours, green, white, and red.

**Itch,** any irritating skin disease. The commonest form is scabies, a disease caused by the animal parasite, *sarcoptes scabiei*, which burrows under the skin and causes intense irritation leading to scratching on the part of the patient with resulting rawness, scabs, and eczematous conditions. It may occur on any part of the body, but rarely on the scalp and often between the fingers. The treatment is application of sulphur ointment. *Barber's itch* is caused by a fungus and affects the hair follicles, particularly those of the beard. The inflammation set up leads

to the formation of pustules at the root of each hair affected. *Caban itch*, an irritating skin disease introduced by soldiers from Cuba; it is supposed to be a mild variety of smallpox. *Coolie itch*, a skin-inflammation common amongst field-workers in Assam and other tropical countries. It is caused by the larvae of *uncinariæ duodenalis*, and the eruptions are confined to the surface of the lower extremities.

Itch-mite, name given to the species of Sarcoptine, a sub-family of arachnids which are parasitic on the skin of mammals, birds, and insects. *Notodres*, *Proscopodectes*, *Sarcoptes*, and *Ortiotes* are among the commonest genera. *S. scabiei* attacks the skin of man, and produces the disease known as scabies.

*Ithaea*: (1) Now called *Thiaki*, one of the Ionian Isles, and lies E. of Cephalonia. It has an area of about 37 sq. m., and is mountainous. Wine and olive oil are the chief productions. The chief tn. is Vathy (pop. about 3,200). This is noteworthy as having been the home of Ulysses. Pop. about 8,800. (2) tn., the cap. of Tompkins co., New York, U.S.A. on Cayuga Lake. Cornell Univ., the New York State Coll. of Agriculture, the Athena Conservatory of Music, and the Empire State School of Printing are situated here. Pop. 19,700.

*Ithome*, name of a fortress and mt. in Messenia, anc. Greece. The fortress played an important part in the Messenian war waged against Sparta during the seventh and eighth centuries B.C.

*Itinerary* (Lat. *itinerarium*, from O. Lat. *itiner*, a journey), name applied by the Romans to a list of the stopping-places, or halts, with the distances from one to another, between two places of importance. The I. was generally divided into two classes, one having the character of a book, and the other being a kind of travelling map. Of the former, the most important are the *Itineraria Antonine*, and the *It. Hieronymianum*. Of the latter only one great example remains, viz the famous *Tabula Peutingeriana*.

*Ito*, Prince Hirobumi (1838-1909), Jap. statesman. In 1863 he worked his way before the mast to London, and joined others of his nation who had come to Europe to study W. civilisation. He returned to Japan in 1865, and took an active part in the social and political reorganisation of the country. From being minister of public works he rose to the rank of Prime Minister in 1880, which office he held four times. He was selected by the Mikado to study the various forms of constitutional gov. in Europe, and was the author of the Jap. constitution of 1889, which in many respects was more liberal than that of several European countries. He was made Prince in 1907, and appointed resident-general of Korea after the Russo-Japanese War, meeting his death at the hands of a Korean at Kharbin.

*Itri*, small tn. of Littoria, Italy. It was the bp. of Fra Diavolo. As a result of the Second World War the tn. and its churches are in ruins. The central part of

the nave of the church of the Annunziata, the bell-tower of S. Maria, and the facade of St. Michele Arcangelo remained intact, but the church of S. Martino was completely wrecked.

*Itá*, or *Itú*, tn. in Brazil, on the R. Ité, 70 m. W.N.W. of São Paulo. It is the centre of a great cotton, sugar, and coffee producing dist., and has cotton factories, and iron and bronze foundries. Pop. 38,000.

*Iturbide*, Augustin de (1783-1824), for ten months emperor of Mexico, was a Creole by birth. In early life he much distinguished himself as a soldier in the royalist cause, which was then endangered by Hidalgo's and Morelos's rebellions. In 1822 he accepted from his devoted soldiers the title of Emperor Augustin I., for the Sp. Cortes refused to recognise the virtual independence of Mexico as set forth in the treaty of Cordova. After a compulsory abdication (1823), the result of his arrogance and despotism, he went into exile, and on returning was met and shot. See M. André, *La Fin de l'Empire espagnol de l'Amérique*, 1922.

*Iturea*, dist. in anc. Syria, lies between Damascus and the Lake of Tiberias in N.E. of Palestine.

*Itzehoe*, tn. of Germany, on the Stör, 44 m. N.W. of Hamburg, is the oldest town in Schleswig-Holstein. The castle of Ennsfleth, round which it was built, was erected by Charlemagne, 809. Pop. 20,000.

*Iuka*, tn. in Mississippi, U.S.A., county seat of Tishomingo co., is 22 m. S.E. of Corinth. Here the Federals under Gen. Rosencrans defeated the Confederates under Gen. Price in 1862. Pop. 1,400.

*Iulus*, see JULUS.

*Iulus*, see ASCANIUS.

*Ivan*, or *John*, name of six grand dukes of Moscow and tsars of Russia.

*Ivan I* (1301-41), surnamed 'Kalita,' or 'Money-Bag,' because of his strict economies, consolidated scattered Russian ters, conquered Moscow and Tver, and made the former city the metropolis and place of Vladimir.

*Ivan II*. (1326-59), son of the above, was a 'gentle and merciful prince,' but a weak ruler, who much diminished the grand duke's prestige. He began to reign in 1353.

*Ivan III*. (1440-1465), called 'the Great,' ascended the throne in 1462. His commander Svenigorod crushed the power of the invading hordes of Tartars (1481). I. introduced fire-arms and cannon into Russia (1475), and also forced the heretofore independent kingdom of Novgorod to acknowledge his suzerainty (1478). He disregarded his boyars, and ruled as an autocrat.

*Ivan IV*. (1530-84), called the 'Terrible,' grandson of the above, came to the throne in 1533. He was a great conqueror, subduing Kazan and Astrakhan and annexing Siberia to the Russian kingdom. Further he was a good legislator, and in 1550 made a code known as Soudbnik. But he was cruel and tyrannical by nature, and was responsible for a number of ruthless massacres.

**Ivan V.** (1666-1696), became tsar in 1682, and was associated in power with his half-brother, Peter. He was quite deficient in personality, and became the tool of stronger men.

**Ivan VI.** (1740-64) never reigned, but passed practically the whole of his life in solitary confinement till his murder in 1764.

**Ivan Gorod, see NARVA.**

**Ivanov, Nicholas** (c. 1858-1918), Russian soldier, son of a common soldier accidentally killed when I. was twelve years old at a military review in presence of Alexander II, who had I. admitted to a military school and helped his advancement. In the First World War he commanded one of the armies operating in Galicia; won much distinction, capturing Lemberg and Przemyśl. In 1915 after the Russian retreat, he resigned his command, but was retained at headquarters by the Tsar—who telegraphed to him when the revolution threatened. I. thereupon made a dash for the cap.; but when he learned that he would be totally unsupported there, he desisted. On Feb. 16, 1918, it was reported at Petrograd that I. had been killed in action at Kiev.

**Ivanovo** (or **Ivanovo-Voznesensk**), region and tn. of central Russia. The tn. was formerly in the gov. of Vladimir and is situated 60 m. N.N.E. of Vladimir. Sown grasses form an important part of the agric. economy in the I. region, which is also noted for dairy farming. I. is the Manchester of Russia—the centre of the cotton-spinning and weaving industry. There are also chemical works. Here is also one of the large regional peat-electric power stations of Russia. I. is connected by rail with Moscow, about 180 m. distant. Pop. (tn.) 285,000, (Region) 4,500,000.

**Ivagh, Edward Cecil Guinness, first Earl of** (1847-1927), Irish philanthropist; third son of Sir Benj. Lee G., M.P., first Bart. Educated at Trinity College, Dublin. From 1886 he was chairman of the limited company then formed to take over the business of G.'s brewery, but he retired from active work on the board in 1889. His first charitable donation was a quarter of a million to be spent in building homes for the poorest workmen of London and Dublin. This fund is now controlled by the London and Dublin Guinness Trusts for Housing the Poor. Guinness became a peer in 1891, and soon afterwards embarked on a scheme for clearing and re-planning seven acres of slum in Dublin city. Here he arranged for labourers' dwellings, a public pleasure garden, swimming baths, and a concert hall. Although a Unionist, he was offered the Lord-Mayorship of Dublin in 1909. In 1919 he was made an earl.

**Ken Wood Mansion**, together with its pictures and furniture, were bequeathed in 1928 by I., for the benefit of the public; together with an endowment fund of £50,000. He also bequeathed the grounds and park of some 74 ac. to the public. The grounds and park are controlled by the L.C.C.; the Mansion and its contents and

the endowment fund are controlled by trustees. There are 63 paintings, including representative pictures by Boucher, Crome, Cuypp, Gainsborough, Fraus Hals, Hoppner, Landseer, Lawrence, Morland, Van Ostade, Raaburn, Rembrandt, Reynolds, Romney, Rubens, Turner, Van Dyck, and Vermeer.

**Ivel**, tributary of the Great Ouse, flowing N.E. and N. through Bedfordshire, England. The confluence is at Tempsford. Length 30 m.

**Iverna, see HIBERNIA.**

**Ives, Frederic Eugene** (1856-1937), Amer. photographic inventor. At age of eighteen was put in charge of the photographic laboratory of Cornell Univ.; so remained till 1878, when he invented the first half-tone process; invented current process in 1886. He also invented in 1894 the photo-chromoscope a device by which a single positive image in natural colours is produced by a combination of three negative ones. The reader is referred to I.'s own publications for the best account of his work. These include *Isachromatic Photography* (1886), and *A New Principle in Heliochromy* (1889).

**Iveston**, vil. in the co. of Durham, England, situated about 9½ m. N.W. of Durham. Pop. about 6000.

**Ivinghoe**, vil. of Bucks., Eng., 9 m. from Aylesbury. It has a fine fifteenth-century church. I. Beacon (762 ft.) and Ring-hall or I. Common were acquired by the National Trust in 1926. I. mill, between I. and Pitstone, 3 m. N. of Tring, Herts, is probably one of the oldest remaining post-mills in Eng. It is preserved as a historic landmark.

**Iviza**: (1) One of the Balearic Isles, situated in the Mediterranean Sea, between 50 and 60 m. from the coast of Spain, to which country it belongs. This is. has a much indented coast and a mountainous and well-wooded interior. The chief productions are fruit of various kinds and salt. Pop. 23,500. (2) The cap. of the above is. It is a fortified tn., and was the see of a bishop. Pop. about 6500.

**Ivory**, term properly given only to the material which forms the tusks of elephants and is 'that modification of dentine, or tooth-substance, which in transverse sections or fractures shows lines of different colours, or striae, proceeding in the arc of a circle, and forming by their decussations minute curvilinear lozenge-shaped spaces' (Sir Richard Owen, *Lectures*, 1836). These tusks are sometimes of tremendous size, a single specimen occasionally weighing 200 lb., and are distinguished from the teeth of most animals in that they are imbedded in semi-solid vascular pulp, and continue to grow in size during the whole life of the elephant. The term ivory is often extended to a similar substance obtained from the walrus, narwhal, hippopotamus, etc. The I. from the African elephant is the most esteemed on account of its superior density and whiteness, but a certain amount is also obtained from India, Ceylon, Burma, and the is. of the E. Archipelago. In African elephants both the males and females have tusks, although those of the

males are larger, but in the Indian species the females are practically tuskless. The 'fossil' I. obtained from the extinct mammoth in Siberia is too brittle to be of much value. Antwerp is the chief market for I. I. is valued according to the size and soundness of the tusks. The natives have discovered the superior value of newly obtained tusks, and palm off a large quantity of 'dead' I., which has been buried for centuries, upon unwary traders. The special qualities of I., its beautiful texture and tints, its perfect elasticity and adaptability to the carver's tools, have been recognised from the earliest times,

seals, hunting-horns, knick-knacks, snuff-boxes, toilet combs, mirror cases, chessmen, and draughts. Prehistoric man used pieces of bone, horn, and ivory for his sketch book and scratched on it drawings of animals. The anc. Egyptians and Assyrians used ivory for domestic purposes and for the decoration of furniture, but Egyptian ivory statuettes have also been found. The Gks used ivory for the decorations on the trappings of their horses and for the bosses of their shields and for small boxes and caskets, but we possess few examples of Gk. ivories, especially of the early period. Of Rom.



*Ivory in Lotus Land by H. J. Ponsing*

#### JAPANESE IVORY CARVERS

and examples of carved I. dating from the time of Moses are still in existence. Vegetable I. is the name given to 'Corozo Nuts,' the hard white, potato-like endosperm contained in the seeds of the palm-like tree (*Phytelphus macrocarpa*) which grows in the low hot valleys of the Andes. It is valued at about £10 a ton, and is used for buttons, etc. For another substitute for I. see CELLULOID. See A. Maskell, *Ivories*, 1906.

**Ivory Carving** Since earliest times ivory has been used either alone or in conjunction with silver and bronze as a decorative material. Ivory has always been used considerably for the decoration of palaces and the Romans sent an ivory throne to Persia, while, in the nineteenth century, an Indian Prince sent one to Queen Victoria. Ivory has also been used a great deal for religious purposes in such things as crucifixes, the heads of pastoral staves, liturgical combs, and even altar-pieces. Secular works of art, in which ivory has been employed, include

ivories we have a great number of consular diptychs, often from writing tablets and plaques which are beautifully carved in relief. The subjects of these carvings were usually classical myths or pictures of Rom. gods. The earliest Christian ivories in existence date from the time of Constantine and among these we have paxes carved from ivory tusks, plaques, and book covers. Byzantine ivories are very numerous and beautiful, and if the figure of Christ, so often portrayed, is inclined to be stereotyped the decorative designs of these ivories are excellent. Up to the end of the fourteenth century, ivory carvings were usually of religious subjects, although often used for secular purposes, but after this date hunting scenes, deeds of chivalry and pictures of tournaments were depicted, the sculptures being influenced by the romantic literature of the period. In India, ivory has been much used for caskets, many of which are extremely beautiful and elaborate. Chinese ivories are often more clever

than beautiful, and consist chiefly of elaborately carved balls and models of villas. Jap. ivories are usually very small, but very well designed and finished. Most Jap. ivories are comparatively modern. In modern times ivory has been used for sculpture, either alone or in conjunction with bronze and jewels. One modern example of ivory sculpture that may be mentioned is the 'Lamia' by George Frampton. This piece is the bust of a woman. The face is life-size and carved out of ivory, while the head-dress and dress are of bronze.

**Ivory Coast, Fr. colony** on the W. coast of Africa, bounded on the S. by the gulf of Guinea, W. by Liberia and Fr. Guinea, N. by Upper Senegal and Niger, and E. by the Brit. colony of the Gold Coast. The low coastal plains extend inland about 40 m., beyond which the ground rises from a general height of about 1000 ft. to the plateau of the Koung ter. (4757 ft.), which is largely covered with almost impenetrable, primeval forest, interspersed with patches of savannah. The rivers are of little importance, and all drain into the gulf of Guinea. The chief products are maize, plantains, rice, bananas, pine-apples, limes, and other fruits, all of which are cultivated by the natives; and rubber, coco-nuts, coconuts, the production of which is fostered by the Fr. for the export trade. There are also mahogany forests. The exports, comprise chiefly palm kernels, palm oil, cacao, rubber, mahogany, cotton, and cocoa. The imports are chiefly tobacco, wines, and metal and cotton goods. The seat of administration, previously at Bingerville (native Adjame), with a European pop. of only about 100, has been transferred to Abidjan (pop. 26,000). The ports are Grand Bassam (in the neighbourhood of which some gold is found), Assinie and Grand Lahou; other chief tns. in the interior, Dimbokro, Abobo, Onagadougou (16,500), Bobo, Dioulisso (13,600) and Bouaké. From Abidjan a railway runs N. to the oil and rubber dist., as far as Tafré, a distance of 300 m., and it is now proposed to extend this to the Niger. There is a large network of roads suitable for motor traffic (11,000 m.). There are six wireless stations in the colony. The colony was estab. in 1899, the coast having been settled in 1843, and the 'hunterland' in 1883. In 1933 a part of Upper Volta was added to the I.C. Area approximately 180,000 sq. m. Pop. 4,056,000. (Europeans 3,800). See T. J. Clozel, *Déans à la Côte d'Ivoire*, 1906; R. Villanour and Richmond, *Notre Colombie de la Côte d'Ivoire*, 1903; and *La Côte d'Ivoire*, 1908; G. Hanotaux, *L'Empire colonial français*, 1929.

**Ivory, Vegetable**, see under IVORY.

**Ivrea, tn.** in the prov. of Aosta, Italy. It is situated about 38 m. by rail N.E. of Turin, on the Dora Baltea. This tn. possesses many interesting buildings, among which may be mentioned the cathedral and the old castle. The anct. tn. was in Rom. times a place of importance. The modern tn. has manu. of silk goods. Pop. (commune) 11,300.

**Ivry-la-Bataille, tn.** in the dept. of Eure,

France. It is noted as the scene of the victory of Henry IV. of Navarre over Mayenne in 1590. Pop. 1400.

**Ivry-sur-Seine, tn.** in the dept. of Seine, France. It is situated on the l. b. of the Seine, S.E. of the fortifications of Paris. It has breweries, earthenware and engineering works. Pop. 42,400.

**Ivy, or Hedera Helix**, one of three species in its genus, which belongs to the Araliaceae. It is an old-world plant, which climbs by means of its roots, bears



IVY

two forms of leaves, and has small flowers which secrete a great deal of honey and are therefore pollinated by insects. The ground-ivy, or *Nepeta Glechoma*, is a species of Labiatae unallied to the common I.

**Ivybridge**, small tn. of Devonshire, England. It is situated in the valley of the Erme, about 10 m. N.E. of Plymouth, and has paper mills. Pop. (1931) 1600.

**Ixelles (Flemish Elsene)**, tn. of Brabant, Belgium, and a suburb of Brussels, in the S.E. of the city. It has manu. of furniture, porcelain, pottery, organs and chemicals. On its ter. are the restored abbey of Ter Kameren, occupied now by the Belgian Cartographic Institute, and the modern building of the National Radio Institute. Pop. 90,700.

**Ixia**, genus of Iridaceous plants, consists of two dozen species, all of which are natives of S. Africa. Sev. are cultivated in Britain for the beauty of their flowers.

**Ixiolirion**, genus of amaryllidaceous plants, is indigenous to W. Asia. There are only two species, and of these *I. kolpukowskianum* is cultivated in Britain.

**Ixion** was, according to Gk. legend, king of Thessaly, son of Phlegyas, and husband of Dia. All men shunned him when he murdered his father-in-law, but Zeus in pity bore him to Olympus. I., however, abused the god's hospitality, and strove to seduce his wife. By embracing a cloud, which he believed to be Hera, he became father to the Centaurs. Zeus

punished his treachery by binding him in hell to a fiery wheel of perpetual motion.

**Ixmiquilpan**, tn. in Mexico, in the state of Hidalgo, is 80 m. N.W. of the city of Mexico. It has valuable silver mines. Pop. 13,000.

**Ixodides**, see TICKS.

**Ixora**, genus of rubiaceous plants found in tropical countries, and the species which number about one hundred, are evergreen shrubs.

**Iyar**, eighth month of the Jewish year (April-May).

**Izabal**: (1) dept. of Guatemala, Central America, on the Caribbean coast. It is low and unhealthy, with extensive forests. (2) The cap. of the above prov. situated on the S. shore of Lake Izabal. Pop. 5100.

**Izamal**, tn. of Yucatan, Mexico, 50 m. E. of Merida. It has many ant. ruins, which are visited by Indian pilgrims. Pop. 6000.

**Izard**, name of a chamois (*Rupicapra tragus*) indigenous only to the Pyrenees. It closely resembles the chamois of the

Alps, but is both smaller and ruddier in hue.

**Izdubar**, or **Gilgamesh**, the name of a hero in a Babylonian epic. See GILGAMESH EPIC.

**Izegem**, city in W. Flanders, Belgium, 20 m. S. of Bruges. Engaged in agriculture and manuf. of linen, footwear, woolen goods, lace, chicory, bristles, and chocolate. There is an active wholesale trade in flax. Pop. 16,700.

**Izhevsk**, or **Izhevsky**, tn. in the Udmurt Autonomous Republic of the R.S.F.S.R., 14 m. S.W. of Perm; it has iron works. Pop. 175,700.

**Izmail**, a region of the Ukrainian S.S.R.

**Izmir**, see SMYRNA.

**Iztaccihuatl** (Aztec, white woman) extinct volcano S.E. of Mexico City. It is joined by a ridge to Popocatepetl (*q.v.*).

**Izu-no-schichi-to** (the seven is. of Izu) lie S. of Tokyo Bay, Japan. They are volcanic is., three craters are active, and Izu-no-Oshima has a well known smoking volcano (Mihara, 2500 ft.) The is. have been used as convict settlements.





**J**, tenth letter of the Eng. alphabet, is one of the few permanent additions of the Middle Ages to the Semitic-Gk.-Lat. alphabet. In exact terms, it was not an addition, but a differentiation from an existing letter. *I* in Lat., besides being a vowel, had the consonant value of *y*, as in *inder* and *major*. The symbols *i* and *j*, a lengthened form of *i* with a curve to the left, were used in the early Middle Ages indifferently for both the consonant and the vowel sound, the sign *j* being used in hands current at this time. At a later stage, from the fourteenth century onwards, the symbol *j* was used for distinctive purposes, particularly when *i* had to be written initially or in conjunction with another *i*. The sound *j* (*dzh*) came into England through Fr., where it had changed in sound from *y* to *zh*, cf. Fr. *juge* which became Eng. 'judge,' but the Lat. value of *j* as *y* may still be found in words of Heb. or other origin, as *hallelujah*, *junker*, and so forth. In Fr. the sound *zh* was also represented by *g*. Consequently, such words, in passing into Eng., by analogy with words like 'judge,' have an alternative spelling of *g* and *j*. For example, M.E. *geste*, *Gives*; N.Eng. 'jest,' 'Jews.' This accounts for variations in the spelling of words like 'gaol' 'jail,' 'gibe' 'jibe,' 'Geoffrey' 'Jeffrey,' 'serjeant' 'sergeant,' and so forth.

**Jabal**, see **JURAL**.

**Jabalpur**, or **Jubbulpore**: (1) The most northerly div. of the Central Provs., India, and also a dist. Area 18,950 sq. m. Pop. 2,100,000. (2) The cap. of above div., 150 m. N.E. of Nagpur, near the Nerbudda R. Formerly the Great Indian Peninsular railway ended here, and the E. Indian railway system began; but between 1920 and 1930 the Great Indian Peninsular railway took over the railway between J and Allahabad and the junction of these lines is now at the latter tn. It is also a commercial city and manufactures cotton goods, tents, and carpets. Pop. 125,000.

**Jabary**, or **Javary**, riv. in S. America, a trib. of the Amazon, joining it near Tabatinga after a course of 400 m. It forms part of the boundary between Brazil and Peru, and is navigable for 300 m.

**Jabbok**, mt. stream of Gilead, E. Palestine, is one of the prin. tribs. of the Jordan. It rises in Jebel Hauran and enters the Jordan 30 m. above the Dead Sea. It has many scriptural associations, and is first mentioned in connection with the meeting of Jacob and Kean. It is now called Mahal-Zarka, from the fortress of Zarka which stands on its banks between Damascus and Mecca. Its length is 110 m.

**Jabes**, see **JAVEA**.

**Jabesh-Gilead**, city of Gilead in Palestine, E. of the Jordan, is important in religious hist. According to Josephus it

was the metropolis of the Gileadites. Here Saul and his three sons were buried. The site is now uncertain.

**Jabiru**, or **Mycteria**, genus of birds belonging to the Stork family (Ciconiidae). The Amer. J., which is found from the Argentine northward to Mexico, stands sometimes as much as 5 ft. high, has pure white plumage except for a black neck and head, and massive, slightly-upturned bill. Other species occur in India, Australia, and Africa.

**Jablonec nad Nisou** (Ger. Gablonz), tn. of Czechoslovakia, situated in the N. of Bohemia, about 7 m. S.E. of Reichenberg. It is famous for its trade in glass and artificial gems. It also has textile industries, paper mills, and printing establs. Pop. 34,000.

**Jablonica** (or **Jablonitz**) **Pass**, in the Carpathian Mts., due W. of Cernowit (Cernauti). During the First World War the Russian S. Army captured this important pass in Aug. 1916, a movement which had some influence upon Rumania's participation in the war on the side of the Entente. The pass is now in the Ukrainian S.S.R.

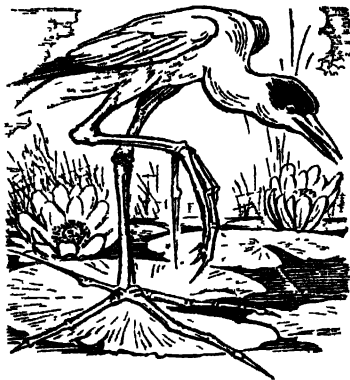
**Jabneel**, tn. in Palestine, between Joppa and Ashdod, 3 m. from the Mediterranean. was an anc. Philistine stronghold. It was taken by the Israelites and played an important part in Jewish hist. It was conquered by the Maccabees and became the centre of Jewish scholarship. The sittings of the Sanhedrin were held here after the destruction of Jerusalem. Near the modern vil., Yabna, built on the anc. site, are the remains of a fortress built by the Crusaders. The Jabneel mentioned in Joshua xxi, 13 is situated S.W. of the sea of Galilee.

**Jaborandi**, native Brazilian name for a number of drugs prepared from several rutaceous plants, but particularly from the leaflets of *Pilocarpus pennatifolius*. The leaflets, when dried, are valuable for their salagogue and diaphoretic actions. They contain two alkaloids, pilocarpine and jaborine, a volatile oil and a bitter substance. The effect of J. is to produce muscular relaxation, salivation, and perspiration.

**Jaca**, fort. tn. in Spain, in the prov. of Huesca, on the Aragón, 66 m. N.E. of Saragossa, with a famous old cathedral. Pop. 5000.

**Jacamar**, little-known species of birds, found in the dense tropical forests of S. America, E. of the Andes, and classed in the family of the Galbulidae. The golden, bronze, and steel lustre of their brilliant plumage, and the length and sharpness of their straight bills, are their chief characteristics. They are usually seen sitting motionless on trees and are therefore counted dull and stupid. The largest species is the *Jacamerops grandis*.

Jacana, or *Paridae*, family of birds whose most striking feature is the length of their toes and claws, which enables them to travel on the flat leaves of water-lilies and other riv. plants. Their eggs are a rich olive-brown, usually streaked with dark lines. The common J. (*Parra*



*jacana*) of Brazil is black with green plumage on the wings and a warm-brown neck. In habit it resembles a water hen. The *Hydrophasianus*, or pheasant-tailed J., frequents the marshes and lagoons of India and China and is the largest of all the genera.

Jacaranda tree, genus of Bignoniaceæ, found in tropical America, consists of about thirty species which are noted for their heavy, fragrant wood; these are also frequently known by the name of rose-wood. *J. ovalifolia*, the green ebony, and *J. mimosifolia*, a native of Brazil, are common species.

Jacchus, or *Hapale jacchus*, name of a species of Primates belonging to the family Hapalidæ or marmosetæ; they are small monkeys found in S. America; their fur is soft and their general appearance squirrel-like; the tail is ringed, longer than the rest of the body, and not prehensile. They are arboreal and feed on insects and fruits.

'J'Accuse': (1) title of a famous open letter, written by Emile Zola to the President of the Fr. republic and pub. in *L'Aurore*, in which he fiercely exposed the official attempts to burke the facts in the notorious Dreyfus affair (*q.v.*). The letter was pub. on Jan. 13, 1898, just after the acquittal of Esterhazy, and Zola was in consequence prosecuted; and though defended by Labori and Albert Clemenceau (brother of Georges Clemenceau), he was convicted and sentenced to a year's imprisonment. He subsequently took refuge in England for a time. (2) The title of a Ger. pamphlet by Dr. Richard Grelling, pub. at Lausanne in April, 1915. It

is a strong indictment of the Ger. ring-leaders who were accused of being responsible for bringing about the war, and is an illuminating commentary on Ger. mentality, placing in a dazzling light the responsibility for the general attack on European liberties. The pamphlet repeats Liebknecht's accusation (manifesto of Dec. 2, 1914) that the whole outbreak was a question of an avoidable war fomented by the war parties of Germany and Austria, and that Germany and Germany alone could have made Austria listen to the voice of reason. The book charges Bethmann-Hollweg with high treason for that on Aug. 14, 1914, he lied with effrontery to the Ger. people in proclaiming to the Reichstag that the war into which he was forcing it was a defensive war. It goes on to say that the prin. culprit was the Kaiser, on whose volte-face executed since 1910—when the Emperor seems to have been a friend of peace—it passes sentence of dishonour.

Jacinth, see HYACINTH.

Jackal (Turkish *chukill*, Persian *shagha*), name applied to many species of the genus *Canis*, but is properly restricted to *Canis aureus*, which is a wolfish, wild, dog-like animal found throughout S. Asia and E. Europe. In colour it is a grey-yellow, the back being darker than the belly. The tail is bushy; the teeth and round eye-pupils resemble the dog's, and its length is some 2 ft. or, with the tail, 3 ft. The shriek of a J. is even more dismal and hideous than a hyena's, and the Arabic name *Deeb* (howler) is certainly appropriate. The common food of Js. is poultry and small mammals, but as they are fond of marauding by night in packs of 200 or so, they sometimes carry off sheep and antelopes. Other species besides the common J. are the Egyptian wolf (*C. lupaster*), the striped J. (*C. lateralis*), and the J. wolf (*C. anthus*).

Jack-a-lantern, popular name of *Ignis fatuus* (*q.v.*).

Jackass, Laughing, name given to the species of *Dacelo*, a genus of coraciiform birds. See LAUGHING JACKASS.

Jackdaw, Daw, or *Corvus monedula*, species of crow. It is smaller than the rook and rarely exceeds 14 in. in length. The plumage is glossy black with purplish wings. Usually it lays five bluish-white eggs, mottled with tiny dark brown spots, and it invariably chooses a hole in which to keep them, often the hollow of a tree, a rabbit burrow, a belfry tower, or a castle turret. It is one of the best of the bird-architects, and has been known to pile a stack of loose sticks 12 ft. high. In disposition it is remarkable for its temerity, domesticity, and cunning. Snails, worms, and insects are its chief food, indeed farmers are indebted to Js. almost as much as to rooks for the destruction of pestiferous insects. Js. are common residents in most parts of the world, though they seem not to be known in America.

Jackson, Andrew (1767-1845), seventh and one of the greatest presidents of the U.S.A., and still to-day, with Thomas Jefferson, one of the patron saints of the Democratic party, b. in N. Carolina, near

the tn. of Monroe. Both his parents were emigrants from Ireland. Although only thirteen at the closing days of the Amer. War of Independence, he took his place in the fighting ranks. He lost his two brothers in this war, and his mother died from exposure while nursing Amer. soldiers. J., having fought his way to education and the law, migrated to what was then considered the W.—the future state of Tennessee. Here by turns he was public prosecutor, planter, storekeeper, judge, and member of Congress. When the young Amer. nation and Great Britain entered on war in 1812, the Creek Indians also made war on the Amers. J., in charge of Tennessee troops, led a punitive expedition, and defeated the Indians in two decisive battles. In the autumn of 1814 Great Britain sent Gen. Sir Edward Pakenham, with a fleet of fifty vessels and 16,000 veteran soldiers to take New Orleans. The Brit. easily sank the Amer. flotilla of gun-boats and landed troops. Unknown to both sides, Great Britain and America had signed a treaty of peace. Thus, a whole series of battles occurred while a ship was in mid-ocean bearing the good tidings. J. defeated the Brit. generals Pakenham and Gibbs, who were killed while gallantly leading their troops into action. J. became a national hero, and the country turned to him in 1818 when the Seminole Indians raided Amer. ter. from the safe jumping-off place of Florida, then still a Sp. possession. J. not only defeated the Seminoles, but, against orders, invaded Florida and as a result of his action Spain sold Florida to the U.S.A. and J. became its governor. In 1823 he was chosen U.S. States Senator for Tennessee. In 1825 he ran for the presidency as a Democrat, other candidates being John Quincy Adams, W. H. Crawford of Monroe's cabinet, and the famous orator, Senator Henry Clay. J. received the highest number of electoral votes, but the decision was thrown into the House of Representatives. Clay lent his influence to Adams, who thus became president. In 1824 J. had his revenge: Adams ran for re-election, with J. once more the Democratic nominee. J. obtained an enormous popular as well as electoral vote. He was the first genuine self-made man of the people to become president of the U.S.A. In 1832 he was re-elected. His second term was marked by his breaking the U.S. Bank. He held that it had too much power, and was a corrupting influence in Amer. political life. The bank's charter was rescinded. He retired at the end of his second term, dying a lonely old man at his residence, the Hermitage, near Nashville, Tennessee, on June 8, 1845. See life by J. S. Bassett, 1916, and A. M. Schlesinger, *The Age of Jackson*, 1945.

**Jackson, Sir Barry Vincent** (b. 1879), Eng. theatrical manager, b. at Birmingham; founder of the Pilgrim Players, 1907; founder and director of the Birmingham Repertory Theatre, 1913, which has produced hundreds of plays old and new. Provided the ana. productions at the Malvern Summer Festivals, 1929–

37. A Governor of the Old Vic, Sadler's Wells and of Stratford Festival Theatre; awarded Gold Medal of the Birmingham Civic Society, 1922. Pub.: *Fifiella* (with Basil Dean), 1911; *The Christmas Party*, 1913; *The Marriage of Figaro* (new adaptation), 1926; *Demos, King and Slave* (adaptation) 1931. Knighted, 1925. See T. C. Kemp, *The Birmingham Repertory Theatre: The Playhouse and the Man*, 1913, 1918.

**Jackson, Sir Francis Stanley** (1870–1917), Eng. politician, governor and cricketer, younger son of the first Lord Allerton, one-time chief secretary for Ireland. Educated at Harrow and Cambridge Univ. He had a distinguished parl. career, entering Parliament in 1915 as Conservative member for the Howden shire Div. of Yorkshire and reaching the chairmanship of the Unionist Party organisation in 1923. Was governor of Bengal, at the time of the Montagu-Chelmsford constitution, in 1927–32 during the height of the terrorist menace, but when he was succeeded by Sir John Anderson the difficult political situation had been mitigated by his firmness and courage. But it is as a cricketer that he will be best remembered. He was in the Cambridge eleven (captain, 1892–93), captain of the Yorkshire eleven, succeeding Lord Hawke as president of Yorkshire Cricket Club; and repeatedly played for Gentlemen v. Players and All-England test teams. Other activities prevented him from ever going to Australia, but his record against Australia in test matches in England more than anything revealed his talents as an all-round player of the first class. In all he played in twenty test matches, making 1412 runs with an average of 48 runs per innings. Yorkshire was champion cc. during his epoch in 1896, 1898, 1900, 1901–2 and 1905. In gentlemen v. Players matches at Lords, J. played 18 innings for an average of 34. In 1904, when he and S. M. J. Woods of Somersetshire bowled unchanged, the Players were dismissed twice, for 103 and 107, J. taking 12 wickets for 77 runs, the best performance of his cricketing career. Against Australia at Leeds he took 9 wickets for 42 runs. As a batsman of the quick-footed type he had no superior, but above all he supplemented his gifts of defence and clean hitting with a temperament admirably suited to any situation; and when he retired from first-class cricket after 1905 he was adjudged by some as perhaps the greatest cricketer in England.

**Jackson, Frederick George** (1860–1938), Brit. explorer. For some months he travelled in Australian deserts; and in 1893 he journeyed on a sledge in mid-winter across the frozen 'tundra' of Siberia, which lies between the Ob and the Pechora. *The Great Frozen Land* (1895) is the narrative of his adventures on this occasion; and in the same way *A Thousand Days in the Arctic* (1899) gives the results of the Jackson-Harsworth Polar Expedition to Franz Josef Land, which he commanded. Crossed Africa Beira to Banana Pt., 1923–26, and made journeys in remoter parts of Central Africa.

**Jackson, Helen Maria** (1831-85), Amer. authoress, was the daughter of a prof. at Amherst College, Massachusetts. Emerson expressed his admiration for her meditative *Verses*, which were pub. in 1870. Her best work of fiction is *Ramona* (1884), which contains an admirable appreciation of Indian character and life. In *A Century of Inshonour* (1881) Miss J. issued a spirited denunciation of the govts. dealings with the natives.

**Jackson, Holbrook** (1874-1948), Eng. writer and bookman, b. at Liverpool, self-educated. He started earning a livelihood in commerce at the age of fifteen. He had however determined on a writer's career and entered journalism in 1907, becoming joint-editor with A. W. Orago of the *New Age*. He also contributed as a freelance writer to most of the leading periodicals of the day. In 1910 he was associated with T. P. O'Connor in the latter's pub., and became editor of *T.P.'s Magazine* (1911-12) and of *T.P.'s Weekly* (1911-14). From 1917 to 1923 he was both owner and editor of a literary jour. *To-Day*. In addition to his interest in literature and book-collecting he was an acknowledged authority on various business matters, and from 1917 until his death he was editorial director of the National Trade Press Ltd. He was also chairman of the Brit. Colour Council. 1933-34, having interested himself in fashions in colour and their introduction. His first pub. book was an essay on Edward Fitzgerald with a bibliography (1899). He was the first to write a full-length study of Bernard Shaw (1907) and also wrote a biography of Wm. Morris (1908). His book *Eighteen Nineties* (1913) is a standard work on the period. An authority on book production, he collaborated in *A Brief Survey of Printing* (1923) and was author of *The Printing of Books* (1938). His vast knowledge, technical, literary, and antiquarian, his love and care of books were the resources out of which he wrote his *Anatomy of Bibliomania* (2 vols. 1930-31), a work modelled on Burton's *Anatomy of Melancholy*. His pub. vols. of essays include *Southward Ho!* (1914), *Oceanic* (1922), *Essays of To-day and Yesterday* (1928), and *Maxims of Books and Reading* (1934). His *Dreamers of Dreams* (1948) contains studies of a number of Eng. and Amer. writers of the nineteenth century.

**Jackson, John** (1769-1845), Eng. pugilist, son of a London boulder. Fought only three fights, defeating Fawcett, at Croydon, in 1788, in the presence of the Prince of Wales; defeated by Ingleston at Ingatestone, 1789, through breaking bones in a fall; defeated Mendoza at Hornchurch, 1795. Champion of England till retirement in 1803. Known as 'Gentleman Jackson.'

**Jackson, Sir Thomas Graham** (1835-1924), Eng. architect; b. at Hampstead; son of Hugh J., solicitor. At first intended to become painter; but entered Sir G. Gilbert Scott's office, 1858. Much of his work was restoration, and nearly all of it was devoted to scholastic or eccles. buildings. In Oxford he designed the new

Examination Schools, the new Radcliffe Library, and extensions to Brasenose, Corpus, and Balliol; in Cambridge, the Sedgwick Memorial Museum, the Law Library, and the Physiological Laboratory. He also designed new buildings for many public schools, including Eton, Rugby, and Harrow. Specimens of J.'s restorative skill may be seen in Great Malvern Priory, and in Winchester Cathedral (for which he received a baronetcy in 1913), and there is a new church of his at Aldershot. R.A., 1896. Books include: *Modern Gothic Architecture* (1873), *Reason in Architecture* (1906), *Gothic Architecture in France, England, and Italy* (1915), *The Renaissance of Roman Architecture* (1921-23).

**Jackson (Stonewall), or Jackson, Thomas Jonathan** (1821-63), Amer. Confederate general, b. in Harrison co., Virginia. Of mixed Scottish and Irish descent, he was essentially the type of man who formed the backbone of the people of the middle states of America. Educated at a small prov. school, he was severely handicapped when he entered W. Point Academy; but he overcame the limitations of his early schooling by pertinacity. He began his military career as an artillery lieutenant, and soon distinguished himself in the war against the Mexicans, serving in Magruder's Battery and being breveted captain for his gallantry at Contreras and at Churubusco (q.v.). But after this war he resigned his commission and took the post of prof. of military science and mathematics at the State Univ. of Virginia. His participation in the civil war is easily explained by his sturdy advocacy of State rights, involving the support of Virginia's slave laws and her right to secede from the Union. Hence, when the war broke out between the Federal and Confederate States, J. was given a command in the S. Army, and at once proved himself to be an efficient and enterprising officer. At the battle of Bull Run he commanded a brigade, and the dour defence made by him and his troops earned him the celebrated sobriquet of 'Stonewall' (1861). In the course of the famous Shenandoah Valley campaign (1862) he succeeded in defeating the three Federal detachments under Banks, Fremont, and McDowell, and later in inflicting a second defeat on Banks at Cedar Run, near Culpeper, Virginia. During the Maryland campaign he obliged 11,000 Federals to surrender in Harper's Ferry and his corps at the tough fight of Antietam rendered yeoman service to the embarrassed Lee. Fredericksburg and Chancellorsville (1863) were his last two battles. At the latter he was thrice wounded and shortly afterwards died. To his soldiers he was a very Napoleon, but with his rare gift for inspiring popularity was combined the intense religious fervour of Cromwell. *Stonewall Jackson, The Good Soldier*, by Allan Tate, 1930, is a critical study of his generalship.

**Jackson:** (1) City in U.S.A., co. seat of Jackson co., Michigan, is on the Grand R., 68 m. W. of Detroit. It is a railway centre, and coal is obtained close by. There are flour and paper mills, foundries,

and breweries. Soap, machinery and chemicals are the prin. manufs. Michigan State Prison is situated here. Pop. 49,600. (2) Co. seat of Madison co., Tennessee, 75 m. E. of Memphis, is on the Forked Deer R. It is the seat of the S.W. Baptist Univ., founded in 1871. It carries on an important cotton trade. Pop. 21,300. (3) The cap. of Mississippi, is on the Pearl R., 15 m. E. of Vicksburg. It contains fine public buildings, including the state house with its valuable library, and sev. charitable and technical institutions. Manufs. of machinery and agric. implements are carried on. Pop. 62,100. (4) The co. seat of Jackson co., Ohio, is 108 m. S.E. of Springfield. It is the centre of an iron and coal producing dist. Pop. 6200.

**Jackson, William** (1730-1803), Eng. musical composer, studied music under the organist of Exeter Cathedral and later under Travers, then organist of the Chapel Royal, London. His *Eleyses* and other part-songs, especially 'Time has not thinned my flowing hair', and the tender melodies in his opera, *The Lord of the Manor* (performed at Drury Lane in 1781), still delight music lovers.

**Jacksonville**: 1) Cap. of Duval co., Florida, U.S.A., and situated on the St. John's R. This city, which is an important railway centre, is well built, possessing many large buildings, while its streets are wide and shaded with trees. It is also a resort for winter visitors, and an important trading place, exporting and importing very largely. It has a natural harbour with a 30 ft. channel at low tide. It has numerous factories, iron foundries, and engineering works. It is a seat of a Confederate Soldiers' Home, and a National Marine Hospital. Pop. 173,100. (2) The cap. of Morgan co., Illinois, U.S.A., situated about 33 m. W. of Springfield. In this tn. are situated sev. educational institutions, among them the Illinois College (Dissecting), the State Conservatory of Music, and Illinois College for Women (Methodist). Pop. 19,800.

**Jaamel**, seaport of Haiti, situated on the S. coast, 30 m. S.W. of Port-au-Prince. The vessels here anchor about half a mile away from the shore. Exports coffee, cotton, and logwood. Pop. 8800.

**Jacob**, also called Israel, son of Isaac and Rebekah. He was one of the three great Heb. patriarchs whose histories are recounted in the Book of Genesis. His twelve sons are spoken of as the ancestors of the twelve tribes. J.'s death took place in Egypt whence he was carried to Hebron for burial. Cheyne considers his name to be that 'not of an individual, but of the imaginary ancestor of a tribe.'

**Jacob, Sir Claude William** (1803-1948), Brit. soldier, son of Major-Gen. Wm. J., educated at Sherborne School and R.M.C., Sandhurst. Entered the army in Worcestershire Regiment in 1882 and transferred to the Indian Army in 1884. Promoted Colonel, 1911. Major-General, 1916. Lieut.-Gen., 1917. Gen., 1920 and Field-Marshal, 1920. First experience of active service was with the Zhob Valley Expedition 1890. N.-W. Frontier campaign, 1901-

1902. At the outbreak of the First World War he went to France with the Meerut Div. and was the only Indian army officer of the Corps to rise to high command there. In 1915 he led the Dehra Dun Brigade at Neuve Chapelle and at Aubers Ridge. Commanded II Corps for the remainder of the war: during the Somme Battles, 1916, when he took Thiepval (q.v.) by a well-planned assault; at the Amiens operations and the pursuit of the Gers, to the Hindenburg Line, 1917, and at the third battle of Ypres; and in Flanders in the final Allied advance to victory in 1918. In 1920 he returned to India on his appointment as Chief of the general staff. In 1924 he was given the N. Command in India. From 1926 to 1930 he was military secretary at the India Office. In 1927 he was appointed Colonel of the Worcestershire Regt. From 1916 to 1933 he was Colonel of the 1st/4th Hazara Pioneers, which body he had formed in 1904 for work on the N.W. Frontier communications. His last official post was Constable of the Tower of London, 1937-43. High as he rose, he narrowly missed reaching the highest positions on two occasions: the first was during the First World War when, as a Corps commander, he was seriously considered as successor to Haig as Commander-in-chief on the W. Front; and in 1924 when the post of Commander-in-chief in India seemed likely to be offered to him, but the choice fell instead to Sir Wm. Birdwood. A soldier of much practical sense and high moral courage, with a great talent for commanding men. Among his many decorations he had the Amer. Distinguished Service Medal.

**Jacobabad**, tn. of Upper Sindh, India. It is situated 45 m. N.W. of Shikarpur, and has cantonments. It obtained its name from Gen. John Jacob, its founder. Pop. 10,000.

**Jacobean**, term applied to architecture and furniture of the reigns of the Stuarts (1603-88), though strictly only to those of the time of James I. J. furniture is generally of heavy oak, skilfully carved. Panelling is characteristic of the interior of the typical J. house.

**Jacobi, Friedrich Heinrich** (1743-1819), Ger. philosopher, b. at Dusseldorf, studied at Frankfurt and Geneva. In 1807 he was made president of the Academy of Sciences at Munich, where he d. His philosophical work was not original in nature, but consisted in keen criticism of the systems promulgated by others. He was largely responsible for drawing attention to the philosophy of Spinoza by his letters to Mendelssohn, *Ueber die Lehre des Spinoza* (1785), and compared Hume with Kant in his work *David Hume über den Glauben, oder Idealismus und Realismus* (1787). He also expounded Schelling's philosophy in *Von den göttlichen Dingen und ihre Offenbarung* (1811). Apart from these he wrote philosophical romances, *Woldemar* (1779), and *Allwill's Briefsammlung* (1799). His collected works were pub. at Leipzig in 1812-24 in six vols. See C. Zöppritsch, *Aus F. H. Jacobi's Nachlass*, 1869; R. Kuhnmann, *Die Erkenntnistheorie Jacobi's*, 1906; O. F.

Bollnow, *Die Lebensphilosophie Jacobsis*, 1933.

**Jacobi, Karl Gustav Jacob** (1804-51), Ger. mathematician, b. at Potsdam, and after completing his education was made prof. of mathematics at Königsberg, from which he retired in 1842, owing to ill-health. He is remembered as the discoverer of elliptic functions, and he helped to formulate the theory of determinants. His most important work is *Fundamenta Nova Theoriae Functionum Ellipticarum* (1829). His *Gesammelte Werke* were pub. 1881-91. See studies by L. Koeufberger, 1901, and A. Kowalewski, 1917.

**Jacobina**, tn in the state of Bahia, Brazil. It is situated in a fertile though mountainous region and has a cotton-growing and cattle industry. Pop. 10,000.

**Jacobins**, Fr. political society formed during the Fr. Revolution, of persons who aimed at constitutional reform of a reasonable kind. They were called J because they used to meet in a building in the rue St. Honoré, Paris, which belonged to the Dominican order, called in France the Jacobin. Afterwards the members grew more extremist and organised the reign of terror; but their power ended in 1794 with the execution of Robespierre. The word 'jacobin' was used in Britain and in Europe generally for the holders of extreme political opinions, and it was to check such views that the *Anti-Jacobin* (q.v.) was launched.

**Jacobites**, name given to the followers of the Stuart house after the revolution of 1688. The name is derived from the Lat. name Jacobus (James). James II had numerous followers in all the countries of the Brit. Isles, but the later Stuarts, the Old and Young Pretenders, received their main support from the Scots. In 1689 Graham of Claverhouse roused the Highlands for James, fought the battle of Killbuck, but died in the moment of victory. The Highlands were peaceful with the peace of devolution, after the massacre of Glencoe. In Ireland the Boyne had been fought in 1690 and the Irish defeated (see JAMES II.), and Ireland also was pacified at the risk of the sword. Ireland, however, was so thoroughly subdued that during the two subsequent rebellions she played no active part. The reign of Anne was one of constant intrigue between the leading statesmen and the Old Pretender, and the Jacobite plot at the end of the reign failed only because of the too sudden death of the queen. In 1715, the Hanoverians having just been estab. on the throne, a Jacobite rebellion took place both in Scotland and in the N. of England. The indecisive battle of Sheriffmuir, the surrender at Preston, and the somewhat depressing presence of the Old Pretender, all contributed to the overthrow of the rebellion. The prisoners taken were treated leniently, and the rebellion died a natural death. The attempts to rouse opposition to the Hanoverians by Alberoni met with no success, and it was not until the middle of the War of the Austrian Succession that the Young Pretender, 'Bonnie Prince Charlie,' landed

at Moldart with seven followers. He roused the Highlands at once, he swept away opposition at Prestonpans, and proclaimed his father James III. He invaded England and reached Derby, but there he commenced to fall back. His march had been conducted in a great arc over some 500 m. from Moldart to the outskirts of Derby, where the decision to turn back was taken at a point only 130 m. short of London. A rebellion on the defensive is of a necessity a failure, and Charles was finally overwhelmed at Culloden. After numerous adventures he managed to escape, and died on the Continent, a weak, broken, dissolute drunkard. His younger brother became a cardinal of the Rom. Church, and thus ended the Stuart line. Every great statesman of the time had intrigued with the Stuarts, from Sunderland and Marlborough down to Newcastle himself. In fact, when Charles reached Derby in 1746, Newcastle was undecided whether to declare for him or not. Many of the great names of the time can be written down as J., amongst them being Sancoft, Harley, Bolingbroke, Atterbury, and later, Samuel Johnson. See Sir C. Petrie, *The Jacobite Movement: First Phase, 1688-1716*, 1949.

**Jacobs, William Wymark** (1863-1943), Eng. author, b. in Wapping, E. London, son of Wm. Gage J., a wharf manager and, thus early familiar with the types of long-short man and sailors whose idiosyncrasies he explored with much success in his humorous stories. Educated at private schools, in the Savings Bank dept. of the Civil Service 1883-99. His earliest literary work was pub. in the *Idler* and *Today* both edited by Jerome K. Jerome, who soon recognised the merit of J.'s humour. Contributed to the *Strand Magazine*. His first vol. of short stories, *Many Carcasses*, was pub. in 1896. This success was followed by *The Skipper's Wooing* (1897); and after *Sea Urchins* (1898) he abandoned the Civil Service and thereafter lived entirely by his pen. J. pub. about twenty vols., chiefly collections of short stories, under such titles as *Light Freight* (1901), *At Sunrise Port* (1902), *The Lady of the Barge* (1902), *Odd Craft* (1903), *Dialstone Lane* (1904), *Captains All* (1905), *Short Cruises* (1907), *Sulthaven* (1908), *Sailors' Knots* (1909), *Ships' Company* (1911), *Night Watches* (1914), *The Castaways* (1918), *Deep Waters* (1919), and *Sea Whispers* (1926). He also wrote some one-act plays, such as *Establishing Relations* and *Dixon's Return*. His gruesome story *The Monkey's Paw* marked a departure from his humorous vein; this story and some others were dramatised in collaboration with Louis N. Parker and successfully played. He also collaborated in *Beauty and the Barge*, a three-act comedy (1906).

**Jacobsdal**, div. of the Orange Free State, S. Africa, and the cap. of that div., situated 25 m. S. of Kimberley. Sev. engagements occurred here during the Boer war (1899-1902). European pop. 400.

**Jacobsen, Jens Peter** (1847-85), Dan. novelist, b. at Thisted, Jutland. He began as a student of botany and later trans. Darwin into Dan. Among his works are

*Marie Grubbe* (1876), *Niels Lyhne* (1880), and a vol. of stories called *Mogens* (1872).

**Jacob's Ladder**, or *Polemonium coeruleum*, a species of *Polemoniaceae* found in temperate climates and of rare occurrence in Britain. It is a perennial herb which attains a height of 1 to 2 ft. and bears blue or white flowers. The popular name is given to the plant because of the ladder-like arrangement of the leaves.



JACOB'S LADDER

**Jacobstadt**, or **Jakabpils**, tn. on the R. Dwina in S.E. of Riga, Estonia. Fighting took place here in Sept. 1915, when the Gers. were endeavouring to break through to Moscow. They achieved some success with a large force of cavalry, but a Russian counter-attack restored the position. Further fighting took place here in March 1916, when the Russians took the offensive. In Sept. 1917, the Gers. crossed the Dwina just above J., and compelled the Russians to concentrate on that place. The Bolshevik Revolution brought fighting to a standstill. Taken by the Gers. in the Second World War, the Russians drove them out again in Aug. 1944.

**Jacobus**, gold coin struck in the reign of James I. of England (1603-25), and thus named after him, J. being the Lat. equivalent for 'James'. It was of the same value as twenty-five shillings sterling, but was put out of coinage at the conclusion of that reign.

**Jacopone da Todi** (1240-1306), It. religious poet, b. at Todi in the duchy of Spoleto. He was originally an advocate, but about 1268 turned a Franciscan, and wrote poems which display an extreme bent towards asceticism. He is an author of the 'laude', which play an important part in the development of It. drama. From 1298 to 1303, Todi was imprisoned for inveighing against and satirising Pope Boniface VIII., and siding with the Colonnes in their struggles against the Pope. On the death of Boniface he was released, after languishing for five years in a dungeon. The authorship of the *Stabat Mater*

has been ascribed to Todi, as also many beautiful Lat. hymns. An ed. of his works appeared at Florence in 1590. See lives by A. D'Ancona, 1884 and Evelyn Underhill, 1919.

**Jacotot, Jean Joseph** (1770-1840), Fr. educationist and inventor of the 'universal method' of education, b. at Dijon. He became successively soldier, military secretary, and holder of various professorial chairs. It was while at Louvain that he applied his method of 'universal instruction,' closely resembling that of Hamilton. The principle of his system is that the mental capacities of all men are equal, and he expounded his views in *Enseignement Universel* (1823). See the life by Guillard, 1860, and J. Tourrier's *Intellectual Emancipation. A Treatise on Jacotot's Method of Universal Instruction*, 1852.

**Jacquard, Joseph Marie** (1752-1834), Fr. mechanician, b. at Oullions, near Lyons. He invented the silk-weaving loom called after him (1801-08), a mechanical contrivance capable of being adjusted to any kind of loom, and doing away with the guidance by hand. The silk weavers offered violent opposition to his machine, and he narrowly escaped with his life on one occasion. His invention, however, revolutionised the art of weaving, and at his death his machine was in almost universal use. Napoleon rewarded him with a small pension.

**Jacquerie**, name given to a revolt of Fr. peasants in 1358, the designation arising from the contemptuous term 'Jacques Bonhomme,' by which the nobles described the peasants. Long continued oppression on the part of the nobles was the cause of the rebellion, which broke out in the neighbourhood of Paris, but extended as far as the banks of the Marne and Oise. Charles of Navarre led the nobles, and Meaux the peasant army, the latter being defeated with great slaughter on June 29, 1358; thus ended the insurrection.

**Jacitation** (Lat. *jacitator*, boaster). The suit *crassa jacitationis matrimonii* may be brought against one who maliciously gives out that he or she is married to the petitioner. The object of the remedy is to enjoin perpetual silence upon that matter against the jacitator, and apparently this suit is the only remedy available for such an injury. It is a remedy inherited by the Probate, Divorce, and Admiralty div. of the High Court from the old eccles. jurisdiction of the spiritual courts, and the statute conferring that jurisdiction in the Divorce Court is the Matrimonial Causes Act, 1857. Suits of J. are extremely rare, probably because the remedy is not adapted, or because at all events there are no precedents to show that it is adapted to establishing the validity of the petitioner's marriage with a third person. There is, however, a statutory remedy under the Legitimacy Declaration Act, 1858, for that purpose which is also the appropriate remedy to estab. the legitimacy of offspring.

**Jadar** (or **Yadar**), riv. of Yugoslavia, just S.W. of Belgrade. It was the scene of a brilliant Serbian victory over the

Austrians on Aug. 20-22, 1914. The battle was fought almost simultaneously with that of Shabatz (Aug. 17), the Serbs, under their crown prince, fighting the two battles in order to prevent two huge Austrian invading armies of 200,000 men in all, which were converging from N. and W. on the military dept. at Valievo, from effecting a junction and so 'squeezing out' the whole Serb army. In this the Serbs were entirely successful, winning first the battle of Shabatz and then that of the Jadar R., their casualties being about half those of the Austrians, who lost in the two defeats some 40,000 in killed, wounded, and prisoners, besides stores, and in addition being compelled to abandon the invasion.

Jade, ornamental stone, generally of green colour, belonging to two distinct species, viz. jadeite and nephrite, often wrongly confounded one with the other. Jadeite belongs to the pyroxene group, while nephrite is a variety of amphibole. J. is highly prized in the E., especially by the Chinese, and is found in China, Burma, and many parts of S. Asia. It was used by the prehistoric peoples of Mexico, Alaska, New Zealand, and other countries, for utensils and carvings, and on many prehistoric sites in Europe, as in the Swiss lake dwellings. J. objects have been frequently discovered. Consult Dr. G. F. Kunz, (ed.), *Investigations and Studies in Jade*, 1906, for a full and exhaustive description of the stone; also S. C. Nott, *Chinese Jade*, 1936.

Jadeite, mineral species related to the pyroxenes and differing markedly from true jade or nephrite. It is a monoclinic aluminium sodium silicate. White or 'carnphor' jade is the purest form, though usually specimens are coloured by the presence of metallic oxides, e.g. chromium causes brilliant green patches. Though the hardness of J. differs but little from that of jade, its sp. gr. is much higher (3.20 to 3.41). It is much more readily fusible. Although implements of J. have been found on many prehistoric sites in Europe, it is only recently that the raw material has been found *in situ* on this continent, viz. in the Alps. Large stores of it have been mined since remote times in S. Asia, etc.

Jaël, Jewish matron, wife of Heber, the Kenite (Judges iv.), who, after the battle on the Kishon, treacherously slew Sisera who, at her invitation, had taken refuge in her tent.

Jaén (1) Prov. of S. Spain, and one of the most fertile dists., being well watered by the Guadalquivir, Segura, and other rivers. It produces wine, oil, cereals, etc., and has lead mines. It was conquered by the Moors on their entrance into Spain and in 1246 fell into the hands of Ferdinand III. of Castile. Area 5200 sq. m. Pop. 809,400. (2) The cap. of the prov., situated on a trib. of the Guadalquivir, 50 m. N.W. of Granada, and 122 m. E.N.E. of Seville. It consists of an old and new tn. the former having remains of a Moorish wall flanked with towers, and irregular, winding streets. The cathedral, on the site of a mosque, is of special interest, and

there are sev. handsome churches. Weaving and milling industries are carried on, but the silk, for which it was at one time famous, is no longer manufactured. Pop. 55,100.

Jafarabad, feudatory state in India in the prov. of Kathiawar. The chief tn. is Jafarabad, 28 m. E.N.E. of Diu, on the estuary of the R. Ranai. Pop. about 5000.

Ja'far Pasha-el-Askeri (1880-1936), Iraqi statesman, b. at Bagdad. Educated: Constantinople and Germany. Entered Turkish army, 1902. Promoted captain in Balkan War, 1912. In the First World War he was chosen to organise the troops of the Sheikh-el-Senussi; and, attempting to invade Egypt, was captured by the Dorset Yeomanry at Agagia. Feb. 26, 1918. In an attempt to escape from Cairo citadel he injured himself; and, during incapacitation, he was converted (by his reading) to the Brit. side. Joined Hejaz army 1917, and was given the C.M.G. on the recommendation of Gen. Allenby. Governor of Aleppo, 1919. Minister of Defence in Iraq, 1920-22, and represented Iraq at Lausanne conference. Prime Minister, Iraq, 1923; diplomatic agent in London, 1925-26. Prime Minister and minister of foreign affairs, 1926-28. Minister in England, 1929-30 and also 1932-34, and called to the Eng. Bar. Iraqi Senator, 1934. Minister of Defence, 1935. Assassinated after a *coup d'état* in Oct. 1936.

Jaffa (anc. Japho; Gk. Joppa), second largest tn. in Palestine, its pop., is estimated at 70,000. It is 51 m. by rail from Jerusalem, of which it was the port in King David's time. The old parts of the tn. stand on a rock dominating the harbour. J. is the headquarters of the S. dist. and the port of Jerusalem. J. was known in the time of the Crusades as Japhe, and has a long hist., both recorded and legendary. It was the reputed scene of the rescue of Andromeda by Perseus and also of the swallowing of Jonah by the whale. Its name is to be found on the tower of Thotmes II at Karnak among the cities mentioned as being overwhelmed by Pharaoh. Later it became a Phoenician city, and then, for a thousand years, Palestine, during which time the logs for Solomon's Temple, after being floated down from the ports of Lebanon by Hiram, were landed. Under the Maccabees, J. became essentially Jewish. Then Pompey conquered it, and, having made of it a Rom. free city, gave it to Cleopatra as a love token. It afterwards became a pawn in the conflicts between the Rom. and Idumean rulers. It was in the house of Simon the Tanner in J. that St. Peter saw the vision recorded in the Acts iv. 43. In the Crusades, Baldwin I. signed the treaty of Jaffa with the Genoese, whence sprang much strife. The city then became a co.; but in 1187 it was captured and destroyed by the brother of Saladin, and then retaken by Richard Coeur de Lion. In 1267 it was again sacked, this time by Ilkars, and in 1799 it was stormed by Napoleon. The strike over Jewish immigration, fomented by the Arab political leaders,



which developed into grave disorders throughout Palestine in 1936, began in J. Though of such antiquity, J. is uninteresting to the visitor. Its streets are narrow and tortuous. N. of the old city is Tel Aviv, the cap. of the state of Israel considerably enlarged through the spur of Zionist development under the Brit. mandatory regime and, in contrast to Jaffa itself, strikingly modern. Oranges from inland are the chief export. There is rail connection with Jerusalem, Kantara, and Haifa over two lines, the junction of which is at Lydda. The port consists of a Customs House and jetty, and a short wharf where lighters land cargoes in smooth water.

**Jaffna**, or **Jaffnapatam**, seaport tn. on Jaffna Is., off the N. coast of Ceylon, 116 m. from Trincomali. It has a ruined Dutch fort, an old Dutch church, and temples. Palmyra timber, tobacco, fruit, rice, and curry-stuffs are yielded, and the Tamils also carry on fishing. Pop. 45,000.

**Jagadhri**, tn. of Ambala dist., Punjab, India, with manufs. of iron and copper, and a borax refinery. Pop. 12,000.

**Jagdalak**, see JAGDALAK.

**Jagellons**, or **Jagellones**, royal dynasty of Poland, descended from Gedimin of Lithuania (d. 1342), founded by Jagello (c. 1315-1341), afterwards Ladislaus II. This illustrious line ruled in Poland from 1386-1572, when, with Sigismund Augustus, the male line became extinct. Through his sister's descendants the J. continued on the throne till 1668. Rulers over Lithuania, Hungary, and Bohemia were also chosen from the J.

**Jagannath**, see JUGGERNAUT.

**Jagannath**, see PUUR.

**Jägerndorf**, see KENOV.

**Jagersfontein**, vil. of Fauresmith div., Orange Free State, S. Africa, 67 m. W.S.W. of Bloemfontein. The celebrated Klipfontein diamond mines nearby rank next to those of Kimberley. J. is on the railway from Cape Town to Pretoria. Pop. 4,500.

**Jagger**, Charles Sargeant (1885-1935), Eng. sculptor, b. near Sheffield. He trained at Sheffield School of Art and at the Royal College of Art, S. Kensington, where he went on a scholarship. Here he won a travelling scholarship and visited Rome and Venice. In 1914 he won the Rome Scholarship for Sculpture of the Brit. School at Rome. His best known work is the Royal Artillery Memorial Hyde Park Corner, London, but is not his best work, being a compromise through collaboration with architects and an organising committee. His most characteristic work is in the manner of the bronze gunners at the sides of this Memorial, the figure on the G.W.R. War Memorial and that of Sir Ernest Shackleton on the building of the Royal Geographical Society. Elected an associate of the Royal Academy, 1926, and a member of the Royal Mint Advisory Committee on Coins, Medals, etc. in 1932. His group in stone for Imperial Chemicals House, Millbank, won him, in 1935, the gold medal of the Royal Society of Brit. Sculptors.

**Jaggery** (Hindustani *shakkar*), coarse brown sugar of the East Indies, chemically the same as cane-sugar. It is made by incision from the sap of various palms, such as the J. coconut, Palmyra, and date-palms (*Phoenix dactylifera*). The Indian *Phoenix sylvestris* and *Caryota urens* also yield J., as do also the *Nipa fruticosa*, *Arnga saccharifera*, and others. The sap or juice by fermentation becomes palm-wine, from which arrack is distilled.

**Jago**, Richard (1715-81), Eng. clergyman and poet, studied at Oxford. He held various livings in Warwickshire from 1746, dying at Snitterfield. His *Poems*, *Moral and Descriptive* were pub. by Hylton in 1754. Among them are: 'The Black-birds'; 'Edgehill' or, the Rural Prospect delineated and moralised'; 'Labour and Genius, a Fable.' See W. Shenstone, *Works in Verse and Prose*, iii., 1777; A. Chalmers, *Works of the English Poets*, xvi., 1810; F. L. Colville, *Worthies of Warwickshire*, 1869; and C. H. Poole, *Warwickshire Poets*, 1914.

**Jagt**, or **Jaxt**, dist. and riv. of Württemberg-Haden, Germany. The dist. has an area of 2000 sq m and a pop. of over 400,000. Chief tn., Ellwangen. The riv. is a trib. of the Neckar.

**Jaguar** (*Felis onca*), large Amer. spotted cat of the order Felidae, found in countries ranging from Texas through Central and S. America to Patagonia. In form the J



JAGUAR

somewhat resembles the leopard, but is more thick set. Its skull resembles that of a lion or tiger. Its movements are rapid and it is very agile. It has a tawny yellow hide, spotted with black, and varies in length from 1 ft. to 6 ft. 9 in. It is generally found singly, and preys upon quadrupeds, such as horses, dogs, and cattle. It emits terrific roars and cries, particularly during the mating season. From two to four cubs are produced at birth towards the close of the year. In disposition the J. is ferocious and bloodthirsty, and after having tasted human

flesh, it occasionally becomes a confirmed 'man-eater.' It submits somewhat grudgingly to captivity, but may become subdued and even docile. It is usually hunted with dogs and poisoned arrows, though sometimes with the lasso, and the skins are imported into Europe in large numbers. The black-furred J. is sometimes regarded as a different species, but the characteristic markings can be detected in certain lights. Amer. naturalists divide the species into a number of forms regarded as distinct, but preferably ranked as sub-species.

Jahangir, Mogul emperor of India, succeeded his father, Akhbar, in 1605 and reigned till his death in 1627. When he ascended the throne his son, Khusrū tried to usurp power and to seize Lahore, whither J. had transferred the seat of gov. Insurrections marked his reign throughout. J. was strongly influenced by his favourite wife, Nūr Mahāl ('Light of the Harem'), and the currency was struck in her name, and court intrigues occupied her life. J. favoured the Jesuit missionaries, whose influence was evident in many seventeenth century buildings in Lahore. The Saman Burj and other parts of the old royal palace and various tombs date from J.'s reign. It was in his time that the Eng. first estab. themselves at Surat and appointed their first embassy to an Indian court. J. was succeeded by his son, Shah Jahān, the founder of Delhi, which city was known to Moslems as Jahānābād. In Jahān's reign the Mogul empire reached the peak of its magnificence. But his chief city of residence was Agra and his name will ever be associated with the glory of Indian architecture, the Taj Mahal, named after his wife, Mumtaz Mahāl, beside whom he lies buried.

Jahn, Friedrich Ludwig (1778-1852), father of gymnastics, or *Turnvater*, b. at Lantz in Prussia. First served in the Prussian army, and in 1811 started the first gymnasium in Berlin. His system did much to revive patriotism and attracted the Prussian youth, but in 1818 his gymnasia were closed on account of the political gatherings held there, which were of too liberal a nature to find favour in the eyes of the Prussian Gov. J. was arrested and imprisoned for six years (1819-25) as a demagogue. He wrote *Deutsche Volkstum* (1810) and *Die deutsche Turnkunst* (1816). See E. Neven-dorff, *Turnvater Jahn, sein Leben und Werk*, 1928 and F. Eckhard, *Friedrich Ludwig Jahn: Eine Würdigung seines Lebens und Wirkens* (2nd ed.) 1931.

Jahn, Otto (1813-69), Ger. archaeologist and classical editor, b. at Kiel. In 1839 he was appointed to the chair of archaeology at Leipzig, where he founded the Archaeological Society. His publs. include works on Gk. art, representations of auct. life on vases, a masterly life of Mozart, and essays on music. His letters were ed. by A. Michaelis, 1913.

Jahrum, tn. and dist. of Fars prov., Persia, 90 m. from Shiraz. The dist. is famous for its shāhān dates, other fruits and tobacco being also exported. Pop. 15,000.

Jahvist (J), or Yahwist, worshipper of Jahveh or Yahweh. The term is now generally applied to the writer or writers of the non-Deuteronomic portions of the Hexateuch, marked by the use of Jahveh, or Jehovah (the 'sacred tetragrammaton' of JHWH or IHUIH), not Elohim, as the name of God. A Jehovist (JE) is properly one who combined the work of Jahvists and Elohistas (E).

Jail Fever is now recognised as a severe form of typhus fever (q.v.). The disease raged in Eng. prisons from the sixteenth century breaking out at the Black Assize of Oxford in 1577. It was caught by many attending the assizes at the Old Bailey as late as 1750, but owing to the improvements in sanitation is now of rare occurrence. See J. Howard, *Account of the State of Prisons*, 1777.

Jainism, doctrine of the Jains, a wealthy and influential Hindu sect, mostly found in the W. dists. of Upper India. It is allied in many respects to Buddhism, but appears to have developed from Brahmanism at an earlier date than Buddhism did. Its origin is attributed to Vardhamana Mahāvira, who lived about the end of the sixth century B.C. The sect flourished greatly between the third and eighth centuries, but subsequently dwindled owing to persecution by the Brahmins. In 1901 the number was given as 1,335,000. The Jains, like the Buddhists, deny the divine origin of the Veda. They believe in the separate existence of the soul after death, even of animals, and this belief leads them to take great care of animal life. They brush seats before sitting, and drink only water that has been strained, never leaving it uncovered for fear that some insect may be drowned in it. They have to practise liberality, piety, gentleness, and penance, and must make a daily visit to the Jain temple. Their principle is to suppress the body by abstinence, continence, and silence. During certain seasons they abstain from honey, grapes, fruits, salt, tobacco, and other articles. The members of the religious order of the Jains are called Yatis, those of the secular order Śravakas, the rules for the former being stricter than those for the latter. The Jains are not divided into castes, except in S. India, but they have certain family groups between which marriage is not allowed. Formerly they advocated leaving the body naked, but this practice is now confined to meal times. Their creed is very detailed, and in many respects fantastic. They reverence deified saints, called Jinas, who give the sect its name. These saints are twenty-two in number, twenty-four each of the past, present, and future ages respectively, the earlier of them being of gigantic proportions who lived enormous lengths of time, while the most recent resemble ordinary humans in those respects. The J. are responsible for many beautiful temples, notably Mount Abu and Mount Parasnath. Their temples are usually constructed with pseudo-arch and dome, built in horizontal courses and with pointed section.

Consult E. Thomas, *Jainism, or the Early Faith of Asoka*, 1877; T. W. Rhys

David, *Hibbert Lectures*, 1881; Jacob, *Jaina Sutras* (vols. I. and II.), 1896; J. Burgess, *Buddhist and Jainist Caves* (2 vols.), 1881-83; J. Fergusson, *Cave Temples of India*, 1880; J. G. Bühler, *On the Indian Sect of the Jains*, 1904; H. von Glasenapp, *Der Jainismus*, 1925; O. J. Shah, *Jainism in North India*, 800 B.C.-526 A.D., 1932; W. Soluhring, *Die Lehre der Jains*, 1935; J. Jaini, *Outlines of Jainism*, 1910.

**Jaintia Hills**, mountainous dist. forming with Khasi a dist. of Assam, India. It lies S. of Brahmaputra valley, E. of the Khasi Hills. Area about 2000 sq. m. The inhab. call themselves Panars, but are known as Santengs (Syntengs) by the Khasis. Coal and limestone are found, and rice is grown.

**Jaipur**, or **Jeypore**: (1) State of Rajputana, India, covering an area of 15,579 sq. m. The central portion is a sandy tableland about 1500 ft. above sea-level, but in the N.W. the surface is broken by a spur of the Aravalli Mts. J. came under Brit. protection in 1818, and is one of the wealthiest and best administered of Indian states. The ruler is the head of the Kachhwaha clan of Rajputs. J. acceded to India in 1947. The minerals found are copper, cobalt, and iron, and large quantities of salt abound. Pop. 3,040,000. (2) Cap. of above state, 850 m. N.W. of Calcutta, and 84 m. N.W. of Ameer. It is a walled city, well built, with the maharajah's palace in the centre, and is the chief commercial centre of Rajputana. Buildings of note are a college school of art, industrial and economic museum, observatory, mint, hospital, and sev. mosques and temples. Fabrics, enamelled gold-ware, and marble sculptures are the prin. manufs. Pop. 145,000.

**Jaisalmer**, **Jalsalmer**, or **Jessulmer**, one of the Rajput states of India. Situated in the great Indian desert, in the W. of Rajputana, it is about 10,000 sq. m. in area. The tn., cap. of the fundatory state, was founded in 1156 by Raval Jaisal, and is 136 m. from Sukkar. There is a strong fort on the hill with many Jain temples. Trade in wool, camels, sheep, and cattle is carried on. Pop. of state 70,000; tn. 5000.

**Jaies**, anct. tn. of Bosnia, on a hill near the junction of the Pliva and Vrbas rvs. The tn. possesses an interesting fourteenth century citadel and a ruined church (fifteenth century), the legendary burial-place of St. Luke. Pop. about 4000.

**Jaipur**, or **Jaipore**, tn. of Bengal, India, 43 m. from Outback. It is a place of pilgrimage. Pop. 11,000 (mostly Hindus).

**Jakutsk**, see **YAKUTSK**.

**Jalalabad**, or **Jelalabad**, tn. of Afghanistan, on the route between Kabul and Peshawar, in a fertile plain near Kabul R., close to Khasia Pass. It is noted for the brave resistance made by the Brit. under Sale (1841-42) to the Afghans. Its defences were destroyed on the Brit. evacuation of Afghanistan, 1842. Pop. about 4000.

**Jalapur**, or **Julapur**: (1) Tn. of the W. Punjab, Pakistan, Gujarat dist., 78 m.

N.W. of Lahore, noted for shawls. Pop. 12,000. (2) Ruined tn. of Jehlam (Jherum) dist., W. Punjab, Pakistan, 68 m. S.S.E. of Rawalpindi. It is identified by Cunningham with Alexander's Bucocephala, built in memory of his famous horse.

**Jalandhar**, **Jullunder**, or **Julunder**, tn. and cantonment of the E. Punjab, India, cap. of Jalandhar dist., 47 m. E.S.E. of Amritsar. It is mentioned in the Mahabharata, and was once cap. of the Rajput kingdom of Katoch (fourth century B.C.). Pop. 75,000 (Moslems).

**Jalap**, well-known purgative medicine, consisting of the dried root of *Ipomoea purga*, a plant belonging to the Convolvulus family. It is a native of the E. slopes of the Mexican sierras, growing at an altitude of about 6000 ft., and is named from the tn. of Jalapa. Jalap-root contains starch, sugar, lignin, etc., but the active principle is a resin present to the extent of 10 per cent., which may be extracted with alcohol. J., which is administered either as a powder or in alcoholic solution, acts as a hydragogue cathartic, and is used in constipation, renal disease, dropsy, and cerebral affections. The ordinary dose of the powder is from 10 to 30 grains.

**Jalapa**: (1) Dept. of Guatemala, Central America. Cap. Jalapa. Chief productions are coffee, the sugar-cane, rice, and maize. Pop. 75,100. (2) Tn. in Mexico in the state of Vera Cruz, of which it is the cap., 60 m. by rail N.W. of Vera Cruz city. It is 4330 ft. above sea level and is situated in a picturesque and fertile dist. with a healthy and temperate climate. The medicinal plant 'jalap' here grows wild. J. is famed for the wide overhanging eaves of its white colonial homes and other buildings, and its red-tiled roofs showing picturesquely against the semi-tropic verdure. The cathedral is a massive structure, with strange low-placed cupolas and with floors which slope slightly towards the altar. The church of the Beaterio was originally a Franciscan convent; its buildings have been renovated and modernised. Another notable church is that of St. Joseph. The Gov. Building or Palacio de Gobierno, is a long, white edifice of colonial type with pillars and archways on the first floor. Paseo del Ayuntamiento (q.v.) is a fine broad paved street leading to the Parque Juárez, with its stairways and tall trees. There are other streets called by such names as Street of Jesus Helps You, Street of the Virgin, Street of John the Carbon Burner, Street of the Devil's Pocket, and Street of the Bellringer. Pop. 47,000.

**Jalapa**, tn. of the United Provs., India, 68 m. W.S.W. of Cawnpore. The surrounding swamps cause cholera and malarial fever. Grain, oil-seeds, and cotton are exported. Pop. 8000 (largely Hindus).

**Jalisco**, state of Mexico, on the Pacific, with a coast-line 280 m. long, and covering an area of 31,846 sq. m. The state is traversed by the Sierra Madre with its volcanic cones, Colima (12,750 ft.), and Nevado (14,100 ft.), being the highest.

The chief riv. is the Rio Grande de Santiago, flowing out of Lake Chapala, and draining the N. portion of the state. The chief industries are gold, silver, and copper mining, and agriculture. Cotton and woollen goods, paper and tobacco are manufactured. Guadalajara (q.v.) is the cap. Pop. 1,418,300.

Jalna, tn. in the state of Hyderabad, India, about 215 m. from Bombay. J. has ceased to be a cantonment since 1903. It is famous for its gardens, which grow large quantities of fruit. Pop. 18,000.

Jalpaiguri, Jalpigori, or Julpigoree, tn. and dist. of India. The tn. is on the R. Tista, about 300 m. from Calcutta. Pop. about 10,000. The dist. includes the W. Duars, and is situated S. of Darjeeling and Bhutan, and N. of Cooch Behar. Area 2960 sq. m. The dist. produces jute and tea, and lime is quarried in the lower Bhutan Hills. Pop. nearly 1,000,000.

Jalpan, tn. in Mexico, Queretaro state, situated about 85 m. from Guanajuato. Pop. 2000.

Jalut, or Jalut, one of the Marshall Is. in the Pacific. It is the administrative centre of the group.

Jam, name applied to the preserve formed from fruit boiled with an equal weight of sugar, which dissolves in the juice of the fruit as the latter is broken. The process of boiling sterilises the entire mixture, and causes the juice to develop the essential 'setting' properties due to the presence of 'pectin bodies' always present in ripe fruits. J., if carefully and well made, can be kept for sev. years, though the quality generally deteriorates after twelve or eighteen months, owing to the crystallisation of the sugar, etc. The time requisite for boiling J. varies according to the nature of the fruit used. It may be anything from ten minutes to one or two hours. The heating process should be carried on over a slow fire, in order not to do away with the aromatic and flavouring principles of the fruit. If the boiling is hurried, these are carried away by the steam, and for this reason home-made J. is superior to commercial, the latter usually being boiled for a shorter period than the former. When J. is made from oranges or lemons and such fruits, it is termed 'marmalade.' The peel of these contains a large proportion of aromatic and flavouring matter, and towards the end of the boiling process is added to the preserve in the form of shreds. In fruit jellies, the juice of the fruit only is used, not the pulp as well, this being removed by straining. It is then boiled with sugar until ready to 'jelly.' Fruits are 'preserved' by covering with water in suitable utensils and heating to a high temp., the vessels being closed while hot. In home-made preserves, the actual proportion of sugar averages about 20 per cent. in commercial, from 10 to 30 per cent. See also PRESERVING.

Jamaica, largest is. in the Brit. W. Indies, forming part of the Greater Antilles. It is situated in the Caribbean Sea, 90 m. S. of the E. end of Cuba. It is 144 m. long, its greatest breadth being 49 m. Area 4450 sq. m. The is. is

divided into three cos.: Cornwall in the W.; Surrey in the E., and Middlesex in the centre, each of which is divided into five parcs. J. is traversed by a mt. range, running E. and W., which culminates in the Blue Mt. Peak (7423 ft.) in the E. region. From this ridge flow numerous rivs., which promote luxuriant vegetation, but, with the exception of the Black R., are useless for navigation. Black R. is named for Maggoty Falls and is navigable for 25 m. The Salt R., and the Calaritta, are navigable for a few miles. Other notable rivs. are the Rio Cobre and the Rio Minho in the S., and the Rio Grande, Martha Brae, and Great Sp. R., in the N. Roaring R., with its beautiful falls in St. Ann's Par., and Rio Cobre, which empties into Kingston Harbour, are the most picturesque rivs. There are many excellent harbours—Port Morant, Falmouth, Old Harbour, Port Maria, etc., but the finest is Kingston in the S.E. It has a total area of about 16 sq. m., and a depth, over at least 7 sq. m., of from 7-10 fathoms. The harbour is protected by a long spit of sand called the Palisadoes 74 m. long, at the extremity of which is Port Royal. The soil is very rich and fertile. The climate of J. is, on the whole, very healthy. By the coast it is warm (mean temp. 80° all the year), but the heat is lessened by cool breezes. The atmosphere is very moist during the two rainy seasons in May and Oct. Inland and on the uplands the climate is delightfully mild. The is. is frequently visited by thunderstorms. Heavy rains and floods caused much damage in 1909 and 1910. There are many valuable plantations. The chief trees grown are mahogany, balata, ebony, cocunut, palm, lignum-vitæ, logwood, and cacti. There is a flourishing trade in fruit, chiefly oranges, bananas, pineapples, mangoes, and grapefruit. Very fine coffee is cultivated, especially in the dist. of the Blue Mts. Maize, Indian corn, Guinea grass, chinchona, tobacco, and ginger are among the products of the soil.

**Industries.**—In the old days sugar and rum were supreme, but in the early nineties of last century they were supplanted for the first time as the leading industries of J. by fruit, which has been steadily growing in importance since that time. The export of bananas has exceeded 25,000,000 bunches in a single year; the production of citrus fruit is also rapidly expanding, as also of coco-nuts. In recent years, however, the banana crops have been much diminished by leaf spot disease (see BANANA). In 1919 the dept. of agriculture produced a new variety of banana, which may supersede both the Gros Michel, which is the world accepted banana, and the Lacatan. The strain out of which the new commercial banana is expected is immune from Panama disease and is resistant to leafspot. J. is famous for its rum, which is still reputed to be the best in the world. Coco-nuts and copra are grown for export. J. is the chief source for the supply of pineapple, or allspice. Other industries include cattle, sheep, horse, and mule breeding,

and dairying. There are about 73,000 ac. under bananas and 40,000 under sugar-cane; 40,000 under coco-nuts, and 6000 under coffee (Ann. Report, 1938). Exports: coconuts, logwood, sugar, bananas, coffee, cocoa, ginger, cigars, oranges, and pimento. The prin. manufs. are rum, oils, mineral waters, and matches. There are cigar factories, distilleries, and breweries, etc. Trade in 1943 and 1944 aggregated between £11½ million and £13½ million. Total imports: 1943, £7,311,340; 1944, £8,971,683; 1945, £9,595,587. Total exports: 1943, £1,237,431; 1944, £4,479,630; 1945, £5,137,045. Imports from U.K.: 1943, £2,566,302; 1944, £1,325,783; 1945, £1,336,461; 1946, £2,451,671; 1947, £3,563,248. Exports to U.K.: 1943, £738,688; 1944, £917,455; 1945, £2,510,557. The large supply of cheap black and coloured labour, coupled with the steep fall in the world-price of sugar—which, as to W. Indian sugar, has to compete with beet-sugar—has resulted in lower wages and a reduced standard of living; and there were serious riots in 1938. These, following on riots in Trinidad, led to the sending out of a Royal Commission, under Lord Moyne (later Secretary of State for the Colonies) to investigate W. Indian Colonies generally and to the organisation of a scheme of small holdings or allotments. Much has been accomplished already to improve conditions in J. by grants and loans under the Colonial Development and Welfare Act, 1940. The assistance approved by way of grant and loan to J. to Jan. 31, 1945 reached £3,775,010 (of which total £3,021,440 was by way of grant).

**Communications.** The is. is intersected by good roads, and there are some 213 m. of railway. The J. Gov. railway (gauge 4 ft. 8½ in.) starts from Kingston, which it connects with Spanish Town (33 m.), Old Harbour, Portus, and Montego Bay. Another line runs from Spanish Town to Bog Walk and Port Antonio. From Bog Walk, Ewarton is reached by another branch line and another line opens up the Rio Minho valley and Upper Clarendon from May Pen. Kingston has a service of electric trams and motor omnibuses. There are telegraph stations and post-offices in every tn. and in many vils.

**Chief Towns.**—The chief tn. is Kingston, the seat of gov. and the largest port and tn. (pop. 109,000); the next in importance are Spanish Town (12,000), Montego Bay (11,500), and Port Antonio (5,500). Headquarters House, formerly Hibbert's House, where the Legislative Council has met since 1870 (when the seat of gov. was transferred from Spanish Town to Kingston), and the colonial secretary's offices are situated in one of the few buildings of note in Kingston which escaped the earthquake and fire in 1907. A notable institution of Kingston is the Institute of J., rebuilt, after the earthquake, in reinforced brick and concrete. It has a large library, especially rich in Jamaican and W. Indian literature. In its Hist. gallery are many notable treasures, including the original 'Shark Papers' exploited by Michael Scott (q.v.)

in his *Cruise of the Midge*; the bell of the old church of Port Royal; and two silver-gilt maces, formerly belonging to the Council and the House of Assembly. The Institute also has a museum containing zoological, geological, botanical, and archaeological specimens. King's House, the residence of the governor, is 4 m. from Kingston, in St. Andrew, on the Liguanea Plain. Port Royal, at the extremity of the Palisadoes, is of historic interest, having been the headquarters of the buccaneers, and the mart of their spoils. Prior to the earthquake of June 1692 it was reputed to be the finest tn. in the W. Indies. In Port Royal is Fort Charles, where Nelson commanded in 1779. The staircase to what is known as 'Nelson's Quarter Deck', a space on the ramparts by the admiral's old quarters, still stands. Port Royal used to be a notable naval station, but the dockyard was closed in 1905, after an existence of 2½ centuries. Spanish Town (13 m. from Kingston), the old St. Jago de la Vega or St. James of the Plain of the Sp. days, was formerly an important tn. and the well-built group of Gov. Buildings round its central square bears witness to its former grandeur. The most notable of these was the King's House, the former residence of the governors, of which little more than the facade remains. The N. side of the square is ornamented by a stately memorial to Adm. Rodney, victor of the battle of the Saints (q.v.). Near the Square is the Cathedral, dedicated to St. Catherine, whose red brick fabric is in pleasing contrast to the surrounding foliage. It is one of the three oldest eccles. buildings in the W. Indies (the others being the cathedrals at Havana and Cartagena). Bog Walk is a vil. close by a noted gorge of the Rio Corbe. Port Antonio, on the N. side of the is., 75 m. by train from the cap., is situated on the shore of a spacious harbour. Formerly a vil. of modest size, it rose to a position of prosperity through the banana industry, but suffered when the United Fruit Company moved their headquarters to Kingston. Montego Bay, second tn. of J. is 112 m. by rail from Kingston. When visited by Columbus it was a large Indian vil. and traces of Arawak life have been found in the neighbouring caves. Its par. church is one of the handsomest in the is. Savanna-la-Mar, the chief tn. of Westmoreland, is the port of a sugar, coffee etc., growing dist. Falmouth (106 m. from Port Antonio) was once a port of some note. Not far from Ewarton are the Roaring River Falls, the largest waterfalls in Jamaica. St. Ann's Par. is a favourite place of visit on account of the views from Mount Diablo. Mandeville is a favourite resort of winter visitors to J.

**Population.** The census taken in Jan. 1943 shows a total of 1,237,063 persons resident on the is. (598,267 males and 638,796 females). The estimated pop. in 1945 was 1,289,051, the natural increase being about 18 per thousand. The white pop. numbers about 15,000, the coloured about 200,000, Indian Asiatic, 30,000 and the rest blacks.

**Dependencies of Jamaica.** Under the

gov. of J. are Turks and Caicos Is., and Cayes Is. (see under their names).

**Constitution.**—The present Constitution of J. came into force in Nov. 1944. The position of J. was unique, because the colony was returning to a form of responsible, representative gov. after an interval of 78 years, and because the proposals for reform submitted to the spokesmen for organized public opinion were, to all intents and purposes, adopted in their entirety. A bicameral legislature was set up, consisting of a House of Representatives of 32 members elected on a basis of universal adult suffrage (women were enfranchised in 1919 but there was then a prohibitive property qualification) and a nominated Legislative Council of fifteen official and non-official members. The old Privy Council of J. disappeared from the Constitution, except for questions of prerogative, in favour of an Executive Council of ten, of whom five are elected by the House of Representatives, and three official and two unofficial members nominated by the governor from the Legislative Council. The governor himself is the Chairman with a casting, but not an original, vote. This new body is the prin. instrument of policy, with the duty of preparing the budget, and of having to approve Bills, by a majority, before their introduction in either House of the Legislature. It functions, in effect, as a Cabinet, and the five elected members are appointed Ministers in charge of depts. of administration. They are the leader of the House of Representatives, who acts as chairman of the Finance Committee of that Chamber, and the ministers of communications, agriculture, education, and social welfare, who preside as such over House committees concerned with their depts. The power of certification of measures which he considers essential but which have been rejected by the Legislature, is exercised by the governor in accordance with the advice of the Executive Council and he retains the power of veto, but, before refusing assent, must consult his ministers and, if they do not agree, the secretary of state. The Constitution is to be tried out for a full electoral period of five years, after which the position is to be reviewed. A general election, held in Dec. 1944, returned to the House of Representatives twenty-three Labour Members, four representing the People's National Party and five independents—these latter closely allied with the J. Labour Party led by Alexander Bustamante, minister of communications. Serious labour troubles occurred in 1946 leading to fatal casualties, Bustamante and the minister for social welfare being tried, but acquitted, on a charge of manslaughter.

**Education.**—The Imperial Gov., in 1946, decided, after consideration of the Report of the W. Indies Committee of the Commission on Higher Education in the Colonies to estab. a W. Indian Univ. College in J. In the first instance the college will be given the status of a univ. college and will prepare students for the degrees of London Univ. Eventually, it is hoped

that the college will, after a reasonable formative period, become a centre of teaching and research. It was also decided to estab. a permanent medical faculty as an integral part of the college. The univ. received its royal charter in 1949. A beginning has been made to erect permanent buildings for the univ., which, at present, is housed in huts outside Kingston.



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#### BANANA HARVESTING IN JAMAICA

**History.**—J. was discovered on May 3, 1492, by Columbus, who called it *Sant Jago* but it has retained its Indian name *Xayinaxa* or *Xayinaca*, 'land of water'. There is much circumstantial evidence about his landing on the above date in the works of Herninder, Peter Martyr, an abbot of Jamaica during the Sp. occupation, and in the transcripts of the records by John Washington Irving's *Life of Columbus* tells us that Columbus landed in Puerto Bueno or the bay later called Dry Harbour but he has no authority for his supposition. There is no reliable evidence to identify the landing of Columbus in J. or the port or bay where he careened or repaired his battered caravel, the *Niña*, which had borne him southward from Juana or Cuba in quest of Santiago or Xayinaxa or Jamaica as it was variously called, or some such is, as he had been truly led to believe lay in that quarter and where he thought to find extravagant treasure in gold and precious stones. According to Frank Cundall, J.'s modern historian, the distinction of being the place of his landing appears to be about equally divided between St. Ann's Bay and Port Maria. It was not till nine years later, on his fourth and last voyage,

that Columbus again visited the is. Being caught in a violent storm, he ran his ship aground near St. Ann's Bay, on the N. coast. He came this time not as a Sp. viceroi but as a shipwrecked refugee, disappointed and broken by the persecution of his enemies. His crews being mutinous and the Arawaks or natives of the is. unwilling to bring him the supplies they had brought on his first visit, Columbus would have starved to death but for playing on the superstitions of the Indians by predicting an eclipse of the moon, a trick which many an explorer has used since in fact and in fiction. When Columbus died (1506) his son Diego inherited his property and went out to Hispaniola (now Haiti and Santo Domingo) as governor. On arriving there he found that J. had been partitioned between two Spaniards, and in order to establish his title, he sent Esquivel to found a settlement in J. under his direction. This settlement was founded on the N. side; but in 1531, because the S. coast was healthier and more suited to vessels sailing to and from Spain, the town of St. Jago de la Vega, now Spanish Town, was founded, and this soon became the chief town. In 1596 the is. was attacked by the Eng. under Sir John Shirley, who pillaged Spanish Town, and in 1643 Col. Jackson, with some 500 men, landed at Port Royal and exacted a ransom from the Spaniards. J., however, remained in Sp. hands for 161 years, and it was not until May 10, 1855 that it changed hands, when Adm. Penn and Gen. Venables, having been disastrously defeated on April 17 and 25 off Hispaniola, gave up the attempt on that is. and sailed for J. instead. Venables reached J. on May 10, and the chief town was occupied with next to no fighting and Governor Don Christoval Arnaldo Ysaasi was forced to capitulate on May 17. Venables' conduct of the campaign was unskilful to a degree; while Penn, father of the Quaker founder of Pennsylvania, seems to have done little else but quarrel with Venables. Later, under the auspices of the viceroi of Mexico and the governor of Cuba a formidable expedition was fitted out with which Don Ysaasi hoped to recover J. But the bravery of the Eng. soldiers dismayed the Sp. commanders at sea and they left the Sp. invading forces in J. to their fate and to the apathy of the Sp. colonists. After this we enter on the constitutional period of Jamaican hist. when civilian governors succeeded military men. The first Eng. governor was Col. D'Oyley, who may be regarded as the real conqueror of Jamaica. In 1661 D'Oyley's military command was changed into a civil governorship and his commission from Cromwell instructed him to govern with the advice of an elected council. The African slaves of the Spaniards, who had been brought into the is. after the virtual extermination of the Arawaks, and who were called Maroons, fled to the mt. fastnesses, and they were not finally pacified until the end of the eighteenth century when, following a rebellion, many of them were deported to Nova Scotia. The year 1760 was notable in Jamaican hist. for

the insurrection of the Coromantyns in Ballard's Valley under a leader called Tacky—certainly one of the most dangerous risings in Jamaican annals. In June 1670 the Brit. occupation of Jamaica was formally recognised by the treaty of Madrid. Colonisation went on and there was a large influx of soldiers and of undesirable refugees, neither of whom made good settlers. Other settlers came from Nevis and other W. Indian is. J. at this time became one of the hiding places of the buccaners, freebooters of all nationalities, who were opposed to the rule of Spain. One of the most famous was Henry Morgan, (q.v.) whose exploits are narrated by the Dutch buccaner, Esquemeling, who sailed with him (see John Esquemeling, *Buccaniers of America*, 1684). Morgan eventually became governor of J. as Sir Henry Morgan.

J.'s hist. from the late 17th to 1831 is the story of the anti-slavery struggle to eventual emancipation. Successive colonial secretaries sought to prevail on the Jamaican legislature to adopt orders in council for the betterment of the condition of the slaves, but the old House of Assembly always proved obstructive. Victor Hugues, the Fr. W. Indian revolutionary and friend of Robespierre, came to J. and tried to work up insurrection and bloodshed, and thus it was that led to the rebellion of the Trelawney tribe of Maroons in 1795. In the critical days of the early 1830's of J.'s hist. it was fortunate for the is. that it had as its governor the Earl of Mulgrave, later Lord Normanby, who was the ideal man to handle a turbulent House of Assembly, which was always disposed to dispute the authority of the Imperial Gov. and even the royal prerogative. It was largely through his conciliatory bearing and firmness that the Assembly was at length induced to accept the Bill for the abolition of slavery. Edward John Eyre, a most experienced colonial administrator, became governor of J. in 1861. The is. fell upon evil times through economic depression and the state of its finances necessitated new taxation. The resulting discontent led to a rising on Oct. 11, 1865, known as the outbreak at St. Thomas in the East. Martial law was proclaimed in the dist. and George Wm. Gordon, who was said to have incited the people, was taken from Kingston to Morant Bay, tried summarily, and hanged. Gordon was a coloured member of the Legislative Council and a considerably landowner but he was prone to inflammatory utterances. This may or may not have justified his apprehension; but, by transferring him from Kingston, where martial law had not been declared, to Morant Bay, where it had been committed, a technical blunder. Later an enquiry was begun in England by a hostile committee of which John Stuart Mill was chairman, but a rival committee under Thomas Carlyle and Charles Kingsley defended Eyre (see on this famous case E. B. Underhill, *The Tragedy of Morant Bay*, 1895)—a biased work by a man who played a conspicuous part in the transactions he records thirty years later; also

controversial, but on the other side is Lord Olivier's *The Myth of Governor Eyre* (1923) and see also the judicially minded work *The Sugar Colonies and Governor Eyre* (1936), by Wm. Law Mathieson. This reverberating event was followed in 1866 by a drastic change in the gov. of J. The one-time reconstituted Assembly, with its charter and large local rights exercised by a very small class, had become of small influence now that the large sugar planter, who, in 1803, numbered nearly 900 were reduced to 300 in 1865. Strong central gov. under the Crown was the only remedy and so J. was made a crown colony with a gov. and council appointed by the Imperial Government (see further under Government, above).

See E. Long, *The History of Jamaica*, 3 vols., 1774; Rev. G. W. Bridges, *The Annals of Jamaica* 2 vols. 1828; W. J. Gardner, *A History of Jamaica* (new ed.), 1909; E. Cundall, *Studies in Jamaica History* 1900; H. G. de Lissac, *In Jamaica and Cuba: Lady Nugent's Journal*, privately pub., 1839; (new ed.), ed. by F. Cundall, West Indian Committee, London, 1934; M. G. Lewis (Monk Lewis), *Journal of a West India Proprietor, 1815-1817*, ed. by Mona Wilson, 1929; Lord Olivier, *Jamaica - the Blessed Island*, 1936; W. J. Brown, *Jamaican Journey*, 1949.

**Jamalpur:** (1) Tn. and municipality of Bengal, India, in the Mymensingh dist., 85 m. N.W. of Dacca. Pop. 26,000, of which about two thirds are Moslems. (2) Tn. and municipality of Bengal, India, 32 m. W. of Bhagalpur. It contains the iron workshops belonging to the E. India Railway Company. Pop. 25,000, the greater part being Hindus.

**Jambes**, tn. of Belgium and S. suburb of Namur, from which it is separated by the Meuse. It is engaged in agriculture and manufs. of glass, crystal, lamp-black, dynamite and asphalt. Pop. 9600.

**Jambi**, tn. in Sumatra, on the r. b. of the Jambi R., about 25 m. N.N.W. of Palembang. Many Hindu sculptures have been discovered in its vicinity.

**Jamblichus Chalcedenus**, see IAMBLICHIUS.

**Jamboree**, originally a drinking-bout or merry-making, but now applied by the Boy Scouts' Association to their national and world rallies. In euche (*q.v.*) it denotes a single hand containing the five high-cards.

**Jambu-dvipa**, one of the seven continents of the world, in the Mahabharata, embracing the gods' dwelling place and the mountain of Meru with its 'jambū' or 'rose-apple' tree. Mountains divide it into nine countries, Bharata (India) being the chief. Poetry and Buddhist works give the name to all India. Others apply it to the mt. dists. only (N.W.), and others to the whole of Asia.

**Jambul**, region of the Kazakh S.S.R. Pop. 62,700.

**Jambusar**, tn. and municipality of India in the Broach dist., Bombay, situated about 28 m. N.W. of Broach. Pop. 11,000.

**James**, name of three important figures in the Apostolic Church: (1) The

son of Zebedee and brother of John, one of the most important of the apostles according to the Synoptic accounts. He and his brother received from Jesus the surname 'Boanerges,' explained as meaning 'Sons of thunder.' In Acts i. 13 ff. he is mentioned among those who, after the Resurrection continued steadfast in prayer at Jerusalem. He was the first of the apostles to suffer martyrdom, being put to death in the year A.D. 44, by Herod Agrippa (Acts xii. 1 ff.). Legend speaks of his having made missionary journeys to Spain, of which country he is the patron saint. (2) The son of Alphaeus, was also an apostle. There has been much discussion as to whether he is to be identified with (4). Mark xv. 40 ff. speaks of his mother as a certain Mary, but little is known of him. (3) The 'brother' of Jesus, surnamed the Just, was, according to Epiphanius, the son of Joseph by a former marriage. Hegesippus (see Eusebius, *Historia Ecclesiastica*, ii. 23) gives a detailed description of his ascetic life of the kind that would appear ideal to an Ebionite, and Josephus (*Jnt.* ix. 9) also tells us that he suffered death by stoning in A.D. 62 under the high-priest Ananus. He was the head of the Jewish Church at Jerusalem and seems to have been the leader of the Judaizing party, eager for the observance of the law.

**James, Saint, The Epistle of**, is placed first among the Catholic epistles. Its title is short, 'James a servant of God and of the Lord Jesus Christ, to the twelve tribes which are scattered abroad.' The traditional view identifies this James with James the Just, Bishop of Jerusalem, and those who hold this view place the date of the epistle very early, before the epistle to the Hebrae, and probably before St. Paul's first missionary journey. The epistle is therefore not to be regarded as a polemical treatise against the Pauline view of faith, but as an independent address to Jewish Christians from a different point of view. Though the apparent antithesis between the insistence of Paul on justification by faith and the emphasis which James lays upon works is great, so much so indeed, that Luther characterised the epistle as 'an epistle of straw,' the two views are not contradictory. An almost entirely different opinion was held by the Tubingen school, now somewhat discredited. They placed the epistle very late. Schweigler and Hansrath ascribed it to the time of Trajan, Hilgenfeld to that of Domitian, being supported in this dating it by Holtzmann and Von Soden. Most of these critics consider the epistle to be the work of a member of the Rom. Church, writing in direct opposition to the Pauline propaganda, for the position of the Tubingen school depends largely on their assumption of an opposition throughout the N.T. between the Pauline theology and that of the older Jewish Christianity. The epistle deals, however, with life not with doctrine. There was some difficulty as to its admission into the Canon. See Zahn's *Introduction to the New Testament* i. (trans. 1909) and commentaries by Ewald, Mayor, and writers named in



article. See also J. Moffatt, *Introduction to the Literature of the New Testament*, 3rd ed. 1918.

**James I.** (1394-1437), king of Scotland, the son of Robert III., at an early age was sent to France by his father. He was, however, captured by Eng. sailors on his way there, and was imprisoned in England by Henry IV. (1406). In the same year and probably a month later than his capture, his father died and he became nominally king of Scotland. The gov. of Scotland was conducted by the duke of Albany, the king's uncle, who showed no desire to ransom his nephew. His education was by no means neglected, and he proved himself one of the best-educated princes of Europe. He was also very active and a good athlete. After accompanying Henry V. to France he was, in 1421, restored to Scotland, the Scots promising a huge ransom. He had married in the same year, Jane Beaufort, daughter of the duke of Somerset. He was crowned in 1424 and with his real accession begins constitutional monarchy in Scotland. He caused the overthrow of Murdoch, duke of Albany, and his son, and proved so powerful a king that he made many enemies. He crushed the violent nobility and was finally murdered by Graham. He was the author of two poems, *The Kingis Quair* and *Good Counsel*. See A. N. Mackenzie *The Rise of the Stuarts, 1329-1513*, 1933; B. Balfour-Melville, *James I.*, 1936.

**James II.** (1430-60), the only surviving son of James I. He was brought up during his minority under the care of his mother, the earl Douglas acting as regent, and after the second marriage of the queen he passed into the custody of Sir Alexander Livingstone. Almost continual civil war waged during the period of his minority, the prize of the victors being the custody of the king. In 1449 J. married and assumed the royal power. He immediately proved himself a strong king. He caused Livingstone to be executed and later stabbed Douglas with his own hands. He crushed the power of the great nobles, and was supported by the majority of them, and also by parliament. He sympathized with the Lollardian cause in England during the wars of the Roses, and after their defeat he attacked the Eng. possessions in the S. of Scotland. At the siege of Roxburgh he was killed by the bursting of a cannon. On the whole the gov. and justice were improved and reformed during his reign. See J. Balfour, *Annales, 1067-1652*, 1825.

**James III.** (1451-88), the eldest son of James II. He became king at the age of nine, and his minority was spent in the custody of Sir Alexander Boyd. In 1469 he married the daughter of the king of Denmark and assumed power himself. The nobles submitted to him, but his desire for peace and for a quiet life soon began to make him unpopular. His brothers plotted against him; both were arrested and one of them died in prison. The other fled to England and was recognised by Edward IV as king of Scotland. War broke out with England, and the

duke of Albany and Richard, duke of Gloucester (Richard III.) were, owing to the actions of the barons, able to march upon Edinburgh. Peace was made, but again Albany rebelled and finally died in 1485. The barons, unable to appreciate the peaceful policy of J. towards England, rebelled and defeated the king at Sauchieburn, where, according to tradition, after the battle he was slain by a soldier in the disguise of a priest who was called in to slay him. See A. Lang, *History of Scotland*, 1900-07.

**James IV.** (1475-1513), was the eldest son of James III., against whom nominally he fought at the battle of Sauchieburn. He was crowned immediately after his father's death, and at once took over the management of the affairs of the realm. He had little or no trouble with his nobles after the frustration of a plot formed at the beginning of his reign to hand him over to the Eng. king (Henry VII. Tudor), and he was intensely popular with the commons. He supported Perkin Warbeck against Henry VII., but the projected war with England came to nothing, and in 1503 the marriage between Margaret Tudor and J., which was to result in the union of the crowns, took place at Holyrood. He raised Scotland to the highest position she had yet attained in Europe, and during his reign the Scottish court was refined and enlightened. The accession of Henry VIII. led to continual bickerings between the two countries, and finally in 1513 J. declared war. He earned some successes at first, but was finally overthrown at Flodden. He died fighting bravely, and with him perished the flower of Scottish nobility. He was a man of generous nature, and an energetic king. See J. Skene, *Memorabilia Scotica*, 1877; 1912, 1923.

**James V.** (1513-42), king of Scotland, son of James IV., succeeded his father at the age of one year, and between the years 1513-28 the country was in a state of constant turmoil, owing to frequent collisions between the Fr. and the Eng. parties in Scotland. The queen, dowager was for a time regent, but finally Albany, at the head of the Fr. party, occupied that position. The king fell into the hands of the Douglasses, who kept him prisoner until the year 1528, when he escaped and began to rule personally. He put down disorder with a firm hand, and proved himself a very capable king, but he was unpopular with the nobles, since he restricted their power too much. He was highly popular with the commons, however, whose rights he preserved. He married in 1538 Mary of Guise. He supported the old form of faith in Scotland, principally because he relied on the clergy for support against the nobles, and refused to follow the lead given by his uncle, Henry VIII. This refusal to listen to the advice of Henry VIII. led to ill feeling between the two countries, which terminated in 1542 in the outbreak of war. The nobles revenged themselves by deserting their king and leaving him to be overwhelmed at Solway Moss. Shortly afterwards he died, leaving as he lay on his deathbed that a daughter had

been born to him—the later Mary Queen of Scots. See E. M. MacKerlie, *Mary of Guise-Lorraine, 1515-1560, 1931.*

James I. (1566-1625), king of Great Britain and Ireland (formerly James VI. of Scotland), the son and only child of Mary Queen of Scots and her second husband, Henry, Lord Darnley. He was born at Edinburgh Castle, and became king in 1567 when his mother was forced to abdicate. He was a boy of great weakness, and never became a strong man, although he lived for nearly sixty years. He was kept outside politics altogether up to the year 1578. He was brought up first of all under the care of the earl of Mar and his countess, for both of whom he seems to have had much affection. Later, on the death of Mar, Sir Alexander Erskine took him into his charge. His education was by no means neglected. George Buchanan being his principal tutor. The times made it necessary that he should be trained as a Protestant, and therefore the theological side of his education was pursued. It was not until 1583 that J. began actually to rule. His reign as James VI of Scotland was altogether for the good of that country. J. broke the power of the baronage and restored the power of the monarchy. He gained the favour of the people, and he was able even to curb the pretensions of the Presbyterian Church, and to introduce a form of episcopal gov. He had been brought up as a Presbyterian, but he never had any very great love for Presbyterianism. He believed above all in the divine right of kings, and held that the chief supporters of this theory—the bishops—were alone to be supported. In England, however, his career was otherwise. He was accepted by his Eng. subjects largely because the alternative to accepting him was civil war. But his pretensions, his intolerance, his personal appearance, and his manners did much to alienate his subjects. His claim of divine right, which he supported by pretence to powers of dispensation and suspension of the laws, quickly gained for him enemies in England. The failure of his foreign policy and his desire to pose as the arbiter of Europe were also points against his general popularity. He failed altogether to see the weakness of Spain, and his desire for a marriage alliance with that country weakened support in England. His reign from 1603 to 1625 may be regarded as one of the essential preliminary causes of the outbreak of civil war in 1642. Truly it has been said 'James sowed the wind, Charles reaped the whirlwind.' He has also been aptly described as the wisest fool in Christendom. He was certainly well educated and well read, but pedantic to a degree. His general reading and his intellectual interests show that he had great sympathy with the education of the time. Amongst writings of his may be mentioned, *Essays of a Prentise in the Divine Art of Poesie* (1584); *Counterblast to Tobacco* (1604). See H. G. Rosedale, *Spanish Match*, 1908; R. S. Rait, *James's Secret, Elizabeth and James VI.*, 1927; H. J. Lusk, *Political Ideas of James I.*,

1921; C. Williams, *James I.*, 1934; J. D. Mackie, *Cavalier and Puritan*, 1936.

James II. (1633-1701), king of Great Britain and Ireland, was the second surviving son of Charles I., and was created duke of York in 1633. During the Civil war he was captured by Fairfax, but escaped to Holland in 1648. During the twelve years which elapsed between this date and the Restoration, he proved himself an able soldier, and was commended both by Turenne and Condé. On the restoration he was appointed Lord High Admiral and Warden of the Cinque Ports. He proved himself an able officer and a wise administrator, and gained a great reputation both for ability and courage. His private life was, however, as immoral as that of his brother, the king. He married Anne Hyde in 1660, under exceedingly discreditable circumstances. By her he had issue Mary and Anne, who both ascended the throne. His second wife was Mary D'Este of Modena, who bore



JAMES II.

him a son, James Francis Edward, known as the Pretender, and a daughter, Mary Louisa, who died young. He avowed himself a Rom. Catholic in 1682, but after the passing of the Test Act, he was forced to give up his offices, and later the Popish Plot drove him to Holland. His exclusion from the throne was proposed by the Whigs, but after Charles's triumph he was able to return. He was first made High Commissioner for Scotland, where he instituted cruel persecutions of the Covenanters, and later he was again made Lord High Admiral. He succeeded in Feb. 1685 to the throne. He promised to defend the Church and the laws, and was received as king with some popularity. He, however, failed to recognise the strength of the Estab. Church. He introduced Catholics into the army and the univ., and assumed the right of dispensing with and suspending the laws of England. The Declaration of Indulgence and the refusal of the bishops to read it in the churches led to their trial for seditious

libel. They were acquitted amidst the applause of the nation and even of the army which J. had gathered at Hounslow to overawe London. The birth of a son to him destroyed Eng. hopes of a Protestant succession, and induced a group of Eng. nobles to send an invitation to Wm. of Orange, without which he would not come. J. was sublimely unconcerned, in spite of repeated warnings, of what was happening, but awoke to the danger after the arrival of Wm. of Orange in England. He attempted to retreat, and finally fled the country. His first attempt to escape failed, and he was brought back, but allowed to escape again. He crossed to France, and from there to Ireland, where he was defeated at the Boyne (1690). He seems to have lost his old courage, and behaved with great cowardice. Two other attempts to restore him (the battle of La Hogue (q.v.) and the Assassination Plot) failed, and after refusing the crown of Poland, J. died at St. Germain in France. He was narrow-minded, and failed to grasp the greatness of the issues against him. To these two causes his failures may be chiefly attributed. See lives by H. Bellin 1928; F. M. G. Higginham, 1934; A. C. Currier, 1914; also J. Marriott, *Crisis of English Liberty*, 1930; M. Hay, *Winston Churchill and James II.*, 1934.

**James, David** (1839-93), actor, whose real name was Belasco, b. in London. He made his first appearance at the Princess's Theatre under Charles Kean, but subsequently appeared at the Royalty in 1863, where he played in Burnand's burlesque of *Iolan*, and estab. his reputation in 1870 with his performance of Zerkel Homespun in the *Heir at Law*. He played at various theatres in many parts, but his most successful was Perkyw Middlewick in *Our Boys*. This piece was played over 1000 times, and was claimed as 'the longest run on record.'

**James Francis Edward Stuart**, see STUART, JAMES FRANCIS EDWARD.

**James, George Payne Rainsford** (1799-1860), Eng. novelist, b. in London. Taking to literature early, he attained some success as a writer of miscellaneous articles, and in 1822 produced a *Life of the Black Prince*, followed within the next thirty years by over a hundred books, mostly novels, the remainder hist., plays, and verse. Many of his tales are historical, *Richieu* (1829) being one of the best. They were very popular, having plenty of adventures told in good Eng., though the characters are mere lay-figures. His style is parodied by Thackeray in 'Barbasure' in *Novels by Eminent Hands*. Though J.'s histories are compilations of no great value, he was for some time historiographer-royal to Wm. IV. From 1850 to 1860 he was British consul successively in Massachusetts, Virginia, and finally Venice, where he died.

**James, Sir Henry** (1803-77), director-general of the Ordnance Survey of England and Wales, b. in Cornwall. He was appointed in 1827, and was made director-general in 1851. He was also director of

the topographical dept. of the War Office in 1857, and was knighted in 1880. He is famous for having applied photo-zincography to ordnance maps (1859), on which subject he pub. a book entitled *Photo-zincography and other Photographic Processes employed at the Ordnance Survey Office*.

**James, Henry, Lord (of Hereford)** (1828-1911), Eng. lawyer and statesman, b. at Hereford, and educated at Cheltenham. Called to the Bar in 1852 he became Q.C. in 1869, entering parliament the same year as Liberal member for Taunton, which seat he retained until 1885. In 1873 he was appointed first solicitor-general, afterwards attorney-general, and received a knighthood. Resuming office under Mr. Gladstone in 1880, he was offered the lord chancellorship in 1886, but declined to accept it, having broken away from his leader on the Home Rule question. Elected for Bury (Lancs.) in 1885, and re-elected in 1890 and 1892, he became a leading Unionist. At the holding of the Parnell Commission he appeared with Sir Richard Webster as counsel for *The Times*, and in 1895 took his seat in the Salisbury cabinet as chancellor of the Duchy of Lancaster with a peerage. A convinced free trader, he strongly opposed the Tariff Reform movement in 1903. During the latter years of his life he took great interest in the Imperial Institute. He was a good sportsman, and for some time president of the M.C.C.

**James, Henry** (1843-1916), Amer. author; b. in New York; son of Henry J., an eminent theological writer and lecturer. He and his brother Wm. (q.v.), were in their boyhood educated in England, France, and Switzerland, and afterwards at Harvard. Henry was intended for the law, but took to literature instead—encouraged by W. D. Howells, then editor of the *Atlantic Monthly*, in which J.'s first story appeared in 1865. For four years he remained in America writing stories in sketches; in 1869 he removed to England. Beginning with the novel *Hatch and Ward* (1871), he pub. a large number of vols.; including novels, collected stories, travel-sketches, criticism, and biography. In spite, or perhaps because, of the peculiar grace and distinction of his work he was rather long in 'arriving'—his first great success being the tale of *Daisy Miller* (1878). He afterwards won universal recognition as being first in his own particular school, a school so far removed from those of older masters of fiction that it has had to create its own circle of admirers. Intensely subtle and analytic in its portrayal of character, dealing little in incident; but probing the depths of individuality, of internal strife, of closely-woven intricacies of thought and feeling—it has nothing in common with romances like those of Scott and Dumas, or broad vigorous stories of everyday life as told by Dickens. Very characteristic and noteworthy specimens of J.'s work are *The Portrait of a Lady* (1881) and *The Golden Bowl* (1904). His novels (in the strict sense) are twenty-one in number. The last was: *The Outcry*, (1911).

*The Ivory Tower* (1917) and *The Sense of the Past* (1917) are unfinished. He lived at Ry, Sussex. He was enthusiastically for England on the beginning of the First World War, in July 1915 he became naturalised as a Brit. subject. He received O.M. in the year of his death. See P. Edgar, *Henry James, Man and Author*, 1927. Van Wyck Brooks, *Pilgrimage of Henry James*, 1928. E. O. Matthiessen and K. B. Murdock, *The Notebook of Henry James*, 1919. Janet Adam Smith (ed.) *Henry James and Robert Louis Stevenson: A Record of Friendship and Criticism*, 1948. F. W. Dupee (ed.) *The Question of Henry James*, 1918.

James, William (d. 1827), naval historian, practised in the Jamaica Supreme Court (1801-13). He was detained prisoner in the U.S.A. in 1812, but escaped to Nova Scotia in 1813. He pub. various pamphlets on the comparative merits of the Eng. and Amer. navies in 1816, but his great work is his *Naval History of Great Britain from the Declaration of War by France in 1793 to the Accession of George IV.* (1820). This appeared in 5 vols. in 1822-24, and was reprinted in 6 vols. in 1926.

James, William (1812-1910), Amer. philosopher, brother of Henry J. the novelist (q.v.), took his degree of M.D. at Harvard in 1870, and became lecturer there in anatomy and physiology in 1872. Inheriting from his father a love for subtle reasoning and mental research together with great power and freshness in expressing his theories, he became assistant prof. of philosophy (1880), prof. (1885), prof. of psychology (1885), and prof. of philosophy (1887-1907). His *Principles of Psychology* (1890) gave him a wide reputation and was reprinted in a condensed form in 1902; he wrote also *The Will to Believe* (1877), *Human Immortality* (1893), *Lectures to Teachers on Psychology and to Students on Life's Ideals* (1899), *The Varieties of Religious Experience* (1902), *Pragmatism* (1907), *A Pluralistic Universe* (1908), and *The Meaning of Truth* (1909). His home was at Cambridge, Massachusetts, but he visited Europe on several occasions, and was invited to deliver the Gifford lectures on natural religion at Edinburgh (1899-1901) and the Hibbert lectures at Manchester College, Oxford (1908). Honorary degrees were conferred on him by the univs. of Padua, Edinburgh, Princeton, Oxford, Durham, and Geneva.

James Bay, inlet in the S. part of Hudson Bay. It received its name from its explorer Capt. Thomas James. It is about 300 m. long and 150 m. wide and contains a number of islands. Moose Factory, at the mouth of the Moose R., is an important trading station of the Hudson's Bay Company.

Jameson, Anna Brownell, (1794-1860), Irish authoress and art critic, b. in Dublin. In 1831 she pub. her first important work, *Memoirs of Female Sovereigns*, followed by: *Characteristics of Women* (1832), *Beauties of the Court of Charles II.* (1833), *Winter Studies and Summer Rambles* (1835), the result of her visit to Canada. It was, however, as an art critic that she ex-

celled, and her writings on the subject of art include *Companions to the public and private picture galleries in London* (1832), *The House of Llanan* (1816), *Views of Early Italian Landscapes* (1815), *Legends of the Monastic Orders* (1830), *Legends of the Madonna* (1832). The work upon which her reputation chiefly rests, *Sacred and Legendary Art* (first part pub. in 1848), was completed, after Mrs. J.'s death, by Lady Eastlake under the title of *The History of Our Lord* (1864). See memoir by Mrs. Macpherson, 1873.

Jameson, Sir Leander Starr (1853-1917), British colonial statesman, b. in Edinburgh, and studied medicine in London (M.D. 1877). Breaking down from overwork in 1878 he went out to S. Africa, settling at Kimberley, where he was very successful, among his patients being President Kruger and Lobengula. He was intimate with Cecil Rhodes, and when the latter, assisted by J.'s influence with Lobengula, established the Brit. S. African Company, the doctor accompanied the first migrant column to Mashonaland in 1890. Next year, being appointed administrator, he succeeded in checking a Boer force of 1000 strong, organised to dispute the Brit. possession of the country. In 1893 a Matabele invasion brought on a war in which J. took a leading part, and ended in the conquest of Matabeleland. Returning home for a rest in 1894 he went out again in 1897, and on Dec. 31 led that disastrous raid into the Transvaal which heralded so many troubles. Captured by the Boers, he was sent home for trial and sentenced to fifteen months' imprisonment, but was loudly applauded in open court. Returning unofficially to Africa he became leader of the Progressive party after the war and Premier on their success in 1901. His measures were liberal, the capt. prisoners were liberated and shortly afterwards restored to the franchise, while strenuous efforts were made to develop the resources of the country, railways and education receiving special attention. In 1905 his party was defeated, and J. resigned office. He was made P.C. in 1907, and Bt. in 1911. See Col. H. Marshall Hol. *The Jameson Raid*, 1930.

James River, largest riv. in Virginia, U.S.A. It rises in the Alleghany Mts., and flows into Chesapeake Bay. It has a length of 160 m., and is navigable for steamboats of 130 tons as far as Richmond (i.e. 150 m. from its mouth). The chief tributaries are the Chickahominy and the Appomattox. Jamestown, the first permanent Eng. settlement, was located on this riv.

Jamestown (1) Cap. of St. Helena, situated on the N.W. coast of the is. It is a coaling station, and contains the residence of the governor of the is. Pop. 1,000. (2) A city in Chautauque co., New York, U.S.A., about 60 m. S.W. of Buffalo, situated on Lake Chautauque, and famous patronised as a summer resort. It has flour, lumber, and cotton mills and paper factories. Pop. 2,600. (3) Former settlement in James City co., Virginia, U.S.A., and was the first Eng. settlement in the U.S.A. founded in 1607. Only remains, however, of this settlement exist

at the present day, and are incorporated in Williamsburg, the first cap. of Virginia. (4) Tn. in the Lydenburg div., Transvaal, S. Africa, situated N. of Barberton in the Kaap goldfields dist. Pop. 3000.

**Jami, Nureddin Abdurrahman** (1414-92), last great Persian poet, b. at Jam in Khorassan. He wrote lyrical poems and odes, and his collection of romantic poems, *Haft Awrang*, contains two of his best known, 'Yusuf u Zuleikha' (trans. 1895 by Rogers) and 'Salaman u Absal' (trans. by FitzGerald, 1856). He also pub. a hist. of the Sufis and other prose works, his chief being *Baharistan*, which has also been trans.

**Jamieson, John** (1759-1838), Scottish scholar and antiquary, b. in Glasgow. After studying for the ministry he was ordained to the Anti-Burgher branch of the Secession Church at Forfar in 1781, and afterwards at Edinburgh in 1797. His chief work is *The Etymological Dictionary of the Scottish Language* (1808), supplement in 1827, and a new ed. in 1879-87. Among his pub. are ed. of Barbour's *Bruce*, and Blind Harry's *Sir William Wallace*.

**Jamkhandi**, cap. of the native state of Jamkhandi, <sup>Prin. J.</sup> India, situated about 37 m. S.W. of Bijapur. Pop. 12,000.

**Jammes, Francis** (1868-1938), French poet, born at Tournaix in the Perennes. In his earlier style there were the delicious *De l'Angelus de l'aube à l'Angelus du soir*, *Le Deuil des primerèrres* and in his later Catholic style *Les Georgiques chrétiennes*. Among his prose stories are *Clara d'Elleuse* (1899), *Almaide d'Etrémont* (1901), *Pomme d'Anis* (1904), *Le Poète rustique* (1920), and *Les Robinsons basques* (1925).

**Jammu, Jamu, or Jummoo**, cap. of the state of Jammu and Kashmir, India, and situated about 80 m. N. of Amritsar. It was once a seat of a Rajput dynasty, now the residence of the Maharajah of Kashmir. Pop. 32,000.

**Jamnagar**, see NAWANAGAR.

**Jamnoiri**, hot springs in Garhwal state, United Provs., India, situated near the source of the R. Jumna. Alt. 10,984 ft.

**Jamrud**, fort, N.W. Frontier Prov., Pakistan. It lies 10-12 m. to the W. of Peshawar at the entrance of the Khyber Pass. It played an important part in 1878-79 in the war with Afghanistan. A new railway line through the Khyber from J. to the frontier of Afghanistan was opened in 1925. Pop. about 6000.

**Jamshid**, the subject of many Persian poems and legends, is supposed to have belonged to the mythical 'Peshdadian' Dynasty, and to have built and reigned in Persepolis about 1000-800 B.C., and to have been dethroned by Zohak, the Arabian.

**Jamtlund**, lan or gov. of Sweden; chief tn., Östersund. Area 20,000 sq. in. Pop. 142,800.

**Jánáček, Leoš** (1854-1928), Czech composer, b. at Hukvaldy, Moravia, son of a vil. schoolmaster. Was a choir-boy at Erno (Brünn) and later choir-master in a monastery. Studied in Prague and Leipzig; settled in Erno as conductor and

composer. Produced a number of operas of strongly national character. His accepted masterpiece is *Jenufa* ('Her Stepdaughter') (1903), a drama of Moravian peasant life. *Katya Kabanova* (1921) is an adapted version of Ostrovsky's famous Russian play, *The Storm*. One of his earliest works was *Sarka* (1887). His other prin. operas are: the one-act *Beginning of a Novel* (1891); *Destiny* (never yet performed or printed, 1900); *Mr Brouček's Excursions* (1914), consisting of two fantastic dreams within a realistic framework; *The Adventures of the Cunning Viren* (1923), many of the characters of which are animals or birds, with a hint of underlying symbolism; *The Mikropoulos Affair* (1924) based on a well-known play by Capek; and *From the House of the Dead* (1928), which adapts for the operatic stage episodes from Dostoevsky's reminiscences of his imprisonment in Siberia. He also composed a considerable quantity of chamber, orchestral and choir music and a fine Slavonic folk mass. J. is one of the three or four great opera composers of the twentieth century and his music has a rich lyrical vein not unlike that of Dvořák or Smetana.

**Jane, Frederick T.** (1870-1916), Brit. naval officer and founder and first editor of the anns. *Jane's Fighting Ships* (from 1898) an authoritative description of the world's navies; and *All the World's Aircraft* (from 1910). Educated at Exeter school. Naval correspondent for the *Engineer, Scientific American, and Standard*. Other pub. include: *Blake of the 'Hullcane'* (1895), *The Port Guard Ship* (1899), *The Torpedo in Peace and War* (1893), *The Jane Naval War Game* (1898) and other works on the game, which he invented, *Heroes of Sea Power* (1906), and *The British Battle Fleet* (1912).

**Janeiro, Rio de**, see RIO DE JANEIRO.

**Janesville**, cap. of Rock co., Wisconsin, U.S.A., on the Rock R. about 70 m. S.W. of Milwaukee. It does a considerable trade in tobacco, and also manufactures cotton and woollen goods. It has much water power, and there are flour, cotton, and woollen mills. Wisconsin State School for the blind is situated here. Pop. 21,000.

**Janet, Paul** (1823-99), Fr. philosopher, b. in Paris. He was prof. of philosophy in Strasbourg Univ. in 1848, and in 1864 became prof. at the Sorbonne, and a member of the Academy of Moral and Political Sciences, receiving prizes from this institution in 1855 and 1858 for *La famille et Histoire de la Philosophie dans l'antiquité et dans les temps modernes*. He also wrote *Les Causes finales*, which has been translated; *Histoire de la philosophie*; *Philosophie de la Révolution Française*; and *Théorie de la morale*. He was a lucid if not original writer, and in philosophy was a follower of Cousin.

**Janet, Pierre Marie Felix** (b. 1839), Fr. psychologist, b. in Paris. Appointed prof. at the Sorbonne in 1898, and at the Collège de France in 1902. A psychologist and neurologist, he is known especially for his researches on hysteria and neurones. He wrote on psychology and psychotherapy.

**Jang, Bahadur** (1816-77), prime minister of Nepal, was a nephew of Mataber Sing, who was a high functionary in Bengal. In 1834 he was made commander-in-chief of the Nepalese army, and in 1846 made himself prime minister when the former holder of the title was murdered. He kept on good terms with the Eng., visiting England in 1850 and rendered much assistance in Oudh in the mutiny of 1857.

**Janiculum**, hill opposite to the city of Rome. It was one of the portions beyond the Tiber included in the fortifications of Aurelius (A. D. 270-275).

**Janin, Jules Gabriel** (1804-74), French critic and novelist, b. at St. Etienne. He made his reputation by his dramatic criticisms in the *Journal des Débats*. His *L'Âne mort et la Femme guillotinée* (1829), was a clever parody of Victor Hugo. This was followed in 1831 by *Barnave* (his best novel), which gives a striking picture of the first Fr. Revolution. He was elected to the Fr. Academy in 1870.

**Janina, Yannina, or Yanina**, cap. of the prefecture of Janina, Greece, is situated in a picturesque position, about 20 m. from the shore opposite the is. of Corfu. It is the seat of a Gk. archbishop, and possesses many mosques and churches. Gold and silver embroidery are still produced in the city; it was the stronghold of Ali Pasha, the tyrant of Epirus, from 1788-1818; was besieged and captured by the Gks. during the Balkan war, 1913. Pop. (prefecture) 159,000 (tn.) 21,000.

**Janizaries**, renowned force of Turkish soldiery estab. in the fourteenth century. Down to about 1800 they were composed of forced levies of Christian youths, to whom were added young captives taken in war. Trained under a discipline both military and monastic, they were taught to look upon the corps as their only home and for centuries they were the flower of the Ottoman troops. Receiving no pay except during the war, they were allowed to work at trades and to act as police. They frequently mutined, and at length in 1826 a final revolt at Constantinople resulted in their annihilation.

**Janjira**, coastal state of the Konkan div. of Bombay, India, having an area of 324 sq. m. The cap. is Murud, and the fort of Janjira lies on an is. at the entrance of Rajpuri Creek. Pop. about 85,000.

**Jan Mayen Island**, the 'Devil's Island,' lies about 300 m. N. of Iceland, in the Arctic Ocean between Greenland and Norway. It is a craggy, volcanic is., whose mossy cliffs are the haunt of millions of seabirds, and whose desolate slopes, when the winter snow recedes, become alive with Arctic plants and an unexpected fauna of insects and spiders, and other small animals. Scattered throughout the is. are the craters of extinct volcanoes, many of recent origin. At one precipitous point, on Egg Bluff, steam still rises from the depths of the is.; nearby, dominating the whole is., the mighty white Boorenberg rises nearly 8000 ft., directly above the surf. From the ice-cap of this volcanic mt. which is about 30 m. round the base and one of the biggest volcanic cones in the world, some fifteen

glaciers drop towards the sea. The is. is economically useless; but it is conveniently situated for the estab. of a meteorological station for the recording of Arctic storms. It was once a vital factory site in the centre of the Arctic whaling grounds. The whales have gone, but traces of the hunt and the hunters were found in 1947 by the Oxford Univ. expedition on every lonely beach. The earliest hist. of J. M. I. is lost even to the Norsemen's legends, but it is agreed that it was discovered long before the whalers made it their summer home. A little over three centuries ago mariners from various nations 'discovered' J. M. I. One of the first of these was the Dutchman Jan May, who landed on the is. in 1614 and whose name it now bears. It was probably discovered first by Henry Hudson in 1607, though others, besides Jan May, since his time have claimed to have discovered it. Fr. whalers called it the Isle de l'Ichelle; in the early days of their whale hunting the Dutch seem to have named it St. Maurice, while their greatest fishing rivals, the Eng. called it Trinity or St. Thomas Smith's Is. The diaries of early voyagers, however, all comment on the stark barrenness of J. M., including that of Robert Fotherby, the Eng. captain who visited the is. in 1615, and reported that in the lowlands 'all the stones were like unto a smith's anvil, both in colour and forme, the sand is generally mixed with a corne like amber.' The Oxford expedition have confirmed that this 'amber' is formed of pretty yellow green olivine crystals which shine from the black laval sand of the beaches. The flora of lichens and mosses clings precariously to the crumbling lava. The sea at times is covered with fulmar, petrels, kittiwakes, little auks, gullenots, and puffins. The Oxford Expedition found the is. uninhabited except for the personnel of a meteorological station maintained by the Norwegian Gov. In damp places under the cliffs vegetation is lush and varied, comprising such familiar things as dandelions, bilberries, anemones and flowering saxifrages. But at altitudes of 7000 ft., and 5000 ft. above the snow line may be found mosses and orange lichens projecting through the snow. (See 'Oxford Goes Exploring,' by A. J. Marshall, leader of the Oxford Univ. Expedition, *The Times*, Nov. 21-25, 1947.)

**Jannes and Jambres**, legendary names of the two wizards who 'withstood Moses' (Ex vii 2; 2 Tim iii. 8). According to some traditions they were the 'two youths' (It V. 'servants') who accompanied Balaam when he went up to curse Israel (Targum i.; Num. xxii 22). They were the subject of many legends, and a book *Pantheia Jannis et Jambres* is referred to among the apocryphal books by Origen. See Schurer, *Gesch.* iii. 203 *et seq.* (1886 '90).

**Jannings, Emil** (b. 1887), Ger. stage and film actor, b. at Rorschach, Switzerland, of Ger.-Amer. parents. He appeared with Max Reinhardt's company in Berlin. His first appearance as a film actor was in an Ernst Lubitch film (1916) and he also

worked for the Amer screen (1925-29). He returned to the stage in 1932. See also CINEMAJOGRAPH, *Development of the Film and Film Acting*.

Jan of Mabuse, see MABUSE

Jansen, Cornelius (1585-1638), a Dutch divine, founder of the school of theology known as Jansenism. He studied at Louvain and Paris, returning to Louvain as a prof in 1617. He lectured on Scripture at the Univ for nearly twenty years and was the leader of the Univ in a bitter controversy with the Jesuits. In 1626, he led a deputation to Spain to plead the cause of the Univ against the Jesuits, and was successful in getting their authorization to teach the humanities and philosophy withdrawn by the Court of Madrid



CORNELIUS JANSEN

(1626). Meanwhile he was working on his great theological treatise, the *Augustinus*, designed to restore the teachings of Augustine to their true place in Christian teaching. In 1636 on the recommendation of Philip IV, he was made bishop of Ypres in 1636 but died soon after in an epidemic in 1638. He had never had a conflict with Rome and in his last will and testament declared that he died an obedient son to that church in which I have lived to my dying hour. Two years after his death the *Augustinus* was published and it immediately appeared that J had favoured the opinions of Banez, an earlier chancellor of Louvain Univ who had taught a doctrine of grace with resemblances to Calvinism. The *Augustinus* had an immense success, and was defended by the friends of J headed by Arnauld (q.v.). For the subsequent history of his doctrine, see JANSENISM.

Jansenism. After the death of the Dutch divine Jansen in 1638 most of his works and letters were published, particularly the *Augustinus* in three vols in 1640. Although Jansen had been strongly anti-Protestant, some of his tenets resembled Calvinism, so that five of them were condemned by the Vatican in 1643. Some of Jansen's friends, especially the fathers of Port Royal, headed by Arnauld, defended these same propositions, and though in

1653 they were declared heretical, Arnauld would not give way. In 1666 he was degraded and exiled, and in 1661 his adherents were ordered to sign a renunciation of his teaching on pain of imprisonment. A truce was established in 1669, and for thirty years the Jansenists, protected by some powerful friends, maintained a precarious footing in France. In 1703 Louis XIV, under Jesuit instigation, began a fierce attack on J., and in 1713 Clement XII issued the bull *Unigenitus*, condemning the *Propositions* of Quesnel, Arnauld's successor. This decree had a very mixed reception in France, though the Catholic party provided the stronger. The leading Jansenists withdrew to Holland, where they formed a church. Jansen had intended to restore the teaching of Augustine to what he conceived to be its proper place in the church, and to prove how much it had been perverted by the schoolmen. In the first vol of the *Augustinus* he defines the distinctive tenets of the Pelagians and semi-Pelagians. The second vol assigns limits to human reason and adjusts the claims of authority with particular reference to the authoritative teaching of Augustine. Reversing the principle of the schoolmen, J affirmed that philosophy and theology were entirely unconnected with each other. Original sin is not mere imputation of sin, it is a deprivation of nature and concupiscence is a taint of sin in body and soul. The third vol treats of the Grace of Christ, and concludes with an attempt to identify the teachings of the Jesuit Molina with those of the semi-Pelagians. The fear of God and of eternal punishment cannot remove evil from the heart. Fear is a self-worth of the feeble soul, there is nothing of God in it, and later in the same context Jansen attacks the scholastic notion of attrition. The fundamental opposition of J's teaching to the Catholic Church lay in his disregarding the distinction between the natural and supernatural order. For him all supernatural gifts were not gratuitous but were simply man's due. In moral questions the Jansenists called the Jesuits laxist, while the Jesuits called their opponents 'rigorist'. In 1653 Innocent X declared various propositions of Jansen to be either heretical, irreligious, or injurious to God. Anthony Arnauld (q.v.), joining issue with the pope, argued that though the views as stated by the pope were censurable they were not to be found in Jansen's work. This reply provoked a long drawn dispute over papal infallibility, the nature of which incidentally Jansen had defended in a doctoral thesis in 1611. Among the most ardent supporters of J in France were the inmates of a nunnery, called Port Royal in the Fields, whose abbess, known later as Maria Angelica de S. Magdalena, was the sister of Arnauld. One of the most famous adherents of J was Pascal the author of the inimitable *Lettres Provinciales*, in which the casuistry of certain Jesuit fathers is brilliantly ridiculed. Louis XIV., at the instigation of the Jesuits, had the nunnery demolished. There was further persecution after the issue of the Papal

bell, *Unigenitus*, which condemned the work *Moral Observations on the New Testament* by the Jansenist, Pasquier (quinet) (q v). But persecution merely had the effect of provoking fanaticism. Marvellous cures and other miracles were attributed to Jansenists, and there arose the Convulsionaries and Flagellants. On the death of Louis XIV, indeed, J showed a bold and defiant front. The Sorbonne, which in his reign was Molinist, became Jansenist in the regency, and by the middle of the century, J was sensibly felt in the Fr Parliament, and its principles were openly professed by men of high political position. The Fr Revolution did much to weaken their hold but did not extinguish them altogether, and the influence of their teachings was felt in the Fr Church throughout the nineteenth century. To day as a separate Church they exist mainly in Holland where they are said to number about 6000. See G. Gribon, *Histoire de Jansenisme* 1700; *Dictionary of Sects, Heresies, Ecclesiastical Parties* 1874; E. Pasquier, *Le Jansenisme (étude doctrinale d'après les sources)* 1909; R. Rapin, *Histoire du Jansenisme depuis son origine jusqu'en 1644*, 1901 and N. Abercrombie, *The Origins of Jansenism* 1936.

Janssen, Cornelius (c 1510-1615) Dutch painter, b probably at Amsterdam. He came to England in 1614 and was taken into the service of James I, whose portrait he painted sev times. His chief pictures are a portrait of Sir George Villiers, father of the famous duke of Buckingham, portrait of Charles I (in Chatsworth House) and Wm Harvey (in the Royal College of Physicians).

Janssen, Peter Johann Theodor (1814-1908), Ger historical and portrait painter, b at Düsseldorf. He was awarded the gold medal in Berlin in 1893 and in 1897 became director of the academy at Düsseldorf. His chief work is 'Walther Dodge and the Peasants of Berg before the Battle of Warrington 1288'.

Janssen, Pierre Jules César (1824-1907), Fr astronomer, b in Paris. He made a study of mathematics and physics, and in 1857 went to Peru in order to determine the magnetic equator. In 1877 he was appointed director of the now astronomical observatory at Meudon, and interested himself in solar photography his results being pub in *Atlas de photographies solaires* (1904).

Janssens, Victor Honorius (1664-1739) Flemish painter, b in Brussels. He was appointed painter to the duke of Holstein, and later, in 1718, became painter to the Emperor of Germany in Vienna. Some of his pictures are 'St Roch curing the Diseased', 'The Sacrifice of Aeneas', 'Dido ordering the building of Carthage'.

Janssens van Nuyssen, Abraham (c 1567-1632), Flemish painter, pupil of Smalftink and rival of Rubens. He was a good colourist and master of chiaroscuro, his touchless scenes being especially fine. Among his best works are 'Resurrection of Lazarus', 'Descent from the Cross', and 'Ecce Homo' (Ghent), 'Entombment' (Antwerp); 'Scaldis', 'Day and Night'.

Janthana, see IANTHINA

Januarius, St., or San Gennaro (d A.D. 305) martyr and the patron saint of Naples. Legend relates that he was bishop of Benevento under Diocletian and that he suffered martyrdom, accompanied by most atrocious tortures, during that emperor's persecutions of the Christians. His body is preserved at Naples and two phials which are said to contain his blood are shown when the phenomenon of the liquefaction of the blood occurs. See *Acta sanctorum* (September), vi 761 891.

January first month of the modern year containing thirty-one days. The name is derived from the Rom. two faced god Janus, to whom it was dedicated. The Angles and Saxons called the month 'Wulfmanuth', because cold and hunger induced the wolves to enter the vills at that season. It was formally adopted by all European nations as the first month of the year in the eighteenth century.

Janus, one of the oldest of the Lat gods. His name is probably derived from the same root as *janua* a gate, although some authorities regard it as the masculine form of Dianus (Janus). He was considered 'the spirit of opening' and is generally represented with two heads which look both ways. He was invoked at the beginning of any enterprise before any other of the gods, and he was invoked as the patron of all openings both concrete, as the gates of public or private buildings, and abstract as the beginning of the day, of the month, of the year, in which capacity the fifth month of the year was dedicated to him. The only priest of his worship was the *Februarium* the king in his capacity as ruler, as head of the state, but every head of a household was in reality regarded as his flamen. His worship was probably introduced by Romulus and Numa built him an archway (erroneously called a temple) which was always kept open in times of war and shut in times of peace. See J. S. Speyer, *Le Dieu romain Janus*, 1832; Warde Fowler's *Roman Festivals*, 1904 and *Gifford Lectures*, 1910.

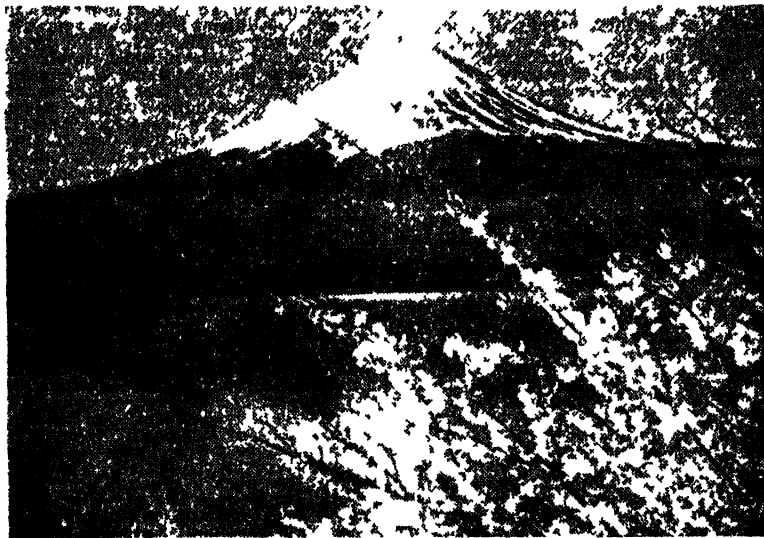
Jaura, native state of Malwa Central India having an area of 581 sq m. The town of the same name is situated about 20 m N of Ratlam. The state is now part of the Malwa Division officially known as Madhya Pradesh. The state produces millet, cotton, maize and popples. Pop (stat) 90,000. (tn) 21,000.

Japan, or Nippon (origin of the sun) long chain of is off the E coast of Asia, divided from the continent by the Jap Sea and washed by the Pacific Ocean on its E shores, lying between long 156° 31' E and 119° 18' W, and between lat 20° 30' N and 0° 30' N. The former Jap Empire had a total area of 263,051 sq m and a pop of 10,226,101 (census of Oct 1, 1910). J now consists only of the is which were formerly known as 'Japan Proper' by way of distinguishing between the homeland and the whole Empire including Formosa, Korea, leased and mandated ter, all of which have now been lost. The homeland, or 'Japan Proper' consists of Honshu (or Mainland) 88,919 sq



m., Hokkaido (which before 1911 included the Kurile Is. as the prov. of Chishima), 14,276 sq. m., Kyushu, 16,247, Shikoku, 9,248 and Ryukyu or Luchu Is., 920 sq. m., with a total pop. of 78,627,000 (estimated) 78,090,361 (actually registered) at Oct. 1, 1947. After J's defeat in the Second World War she was forced to surrender her other seized lands, including Manchuria (Manchukuo) with an area of 404,428 sq. m. and a pop. of 41,233,954, the Kuriles, or the 'Myriad Isles' - Formosa, or Taiwan, ceded to J. by China in 1895; the peninsula of Korea, or Chosen

1325 sq. m., and is studded with beautiful little is. Four narrow waterways connect it with the Pacific Ocean and the Sea of J., on the W. Shimonoseki Strait, on the S. Miyamoto Strait, and on the N. the straits of Yura and Naruto. On the W. shore of Kyushu lie three promontories, Nomo, Shimabara, and Kizaki, enclosing a bay on whose shores stand Nagasaki and the (pre-1945) naval port of Sasebo. On the S. of Kyushu lie the bay of Kagoshima, further N. the inlet of Wakasa-wan carrying the harbour of Isuruga, and the (pre-1945) naval port of Maizuru.



FUJI YAMA, or FUJI-SAN

E N A

(84,102 sq. m.), annexed by J. in 1910, the S. half of Sakhalin Is., called Karafuto by the Jap. (area 13,114 sq. m.) and ceded by Russia in 1905, and the Marshall, Caroline, Ladrone (excepting Guam), and Pelew Is., former Ger. possessions in the N. Pacific, which were placed under Jap. mandate under the treaty of Versailles (1919) and were renamed Nanuo, comprising a total area of 830 sq. m. with a pop. (1937) of 121,128. The coastline, which exceeds 17,000 m. is long in proportion to the area, with the exception of Honshu, and is deeply indented, especially on the E. shores. There are only two large bays on the E. coast, those of Sendai and Matsushima, but there are hundreds of smaller indentations. Further S. lie Tokyo Bay, the gulf of Sagami, and the bays of Suruga and Ise. The famous inland sea that separates Shikoku from Kyushu is one of the loveliest sheets of water in the world. It measures about

The Is. are traversed from end to end by ranges of mts., many being volcanic, some few of which are still active. The most famous mt., both for its height (12,397 ft.) and for its singular beauty of form and setting, is Fuji-yama, or Fuji-san, it lies a short distance from the great port of Yokohama in Honshu, the slopes are cultivated as far up as 1,000 ft., then moorland and forest stretch up to the summit, which is crowned with ashes and scoriae. The volcano appears to be extinct, having been dormant since 1707, but the hist. of other volcanoes forbids the people to trust wholly its present peaceful appearance. It possesses a wonderfully perfect shape, and Jap. artists have made its picture familiar by constant reproductions; eight lakes lie at the foot of Fuji-san and add greatly to the beauty of the scenery. Among the highest mts. after the Fuji range are those in the prov. of Hida and Etchui, six of these rise to 9000 ft.; they

are known as the Jap. Alps. The Nikko Mts. are another range famous for their beautiful vegetation and countless waterfalls. The highest peaks of all are Niitakayama (14,270 ft.) and Mt. Sylvia, both in Formosa. These are only a few of the multitude of ranges which exist through all the is. The mt. scenery is not rugged, but soft and beautiful; the vegetation of the hill-sides is exceedingly brilliant; the highest peaks do not carry snow all the year round. One famous mt. on the boundary of Hiuga, known as Kirishimayama (5538 ft.), is especially sacred to the Jap. because the god Ninigi descended on its E. peak and introduced the first Jap. emperor, Jimmu. Many of the volcanoes have after long intervals of silence suddenly become active, such as Bandai-san (6037 ft.) which burst into terrible activity in 1888 and destroyed utterly seven prosperous vils. and hundreds of people, or Asamayama, 90 m. S.W. of Tokyo, which was in eruption in May 1912, and caused widespread damage. The volcanic character of the country has given J. one great gift in the shape of numberless hot springs, widely reputed for their medicinal value. Though very mountainous the country has sev. extensive plains; that of Kwantō, which is very fertile, holds the cap., Tokyo, and the tn. of Yokohama. None of the rvs. are of any considerable size, though probably no country is so well watered by a network of streams and lakes. The longest riv. is the Tshikarigawa (275 m.), and one of the most important is the Tone gawa (177 m. long). Its mouth being Shimoso. The Shinano (216 m.) waters the plain of Echigo, flows into the sea of J., and is navigable for about 90 m. Most of the rvs. are short, rapid, and shallow, gaining depth when the snows are melting; they are freely used for electric purposes and whenever possible for transport. The lakes of J. are numerous. They are very beautiful, the largest being Biwa in the centre of Honshū, about 180 m. in circumference; it possesses eight views of wonderful beauty and is much loved by the Jap. Lake Suwa in Shinano is also celebrated for its beauty. The eight lakes at the foot of the slopes of Fuji-yama are popular resorts for both foreigners and Jap.

The geological basis of the is. consists of granite, syenite, and diorite, granite everywhere predominating; the granite is not always pure, e.g. in the valleys of Nikko a granite-porphyr is found with crystals, felspar, and quartz, etc. The soil is usually workable and prolific, and along the banks of the rvs. fertile and well adapted for the cultivation of rice. The climate necessarily varies in different parts of the empire owing to the long extension of the is. Its general characteristics are heat and moisture through the short, bright summer, followed by long, cold, fine winters. There are three wet seasons, the first from the middle of April to the beginning of May, the second from the middle of June to the beginning of July, and the third from Sept. to early in Oct. In the more mountainous dists. of the is. the snowfall during the winter is very deep. J. is, rather a wet country, and although

the brilliant sunshine assists in making a healthy climate, bad fogs are prevalent even during the summer. The typhoon, or great wind, is a terrible visitor, especially during Sept., though few months escape one exhibition of its force. The equivalent of nearly £3,000,000 sterling has been expended in one year for damages caused by the typhoon, including the destruction of ships, vils., roads, embankments, and bridges, etc. The is. also suffer from frequent earthquakes, accompanied by tidal waves which claim thousands of human victims. In 1923 a terrible earthquake occurred in which nearly 150,000 people were killed in Tokyo and Yokohama, and the damage done was estimated to cost about five billion yen. This was followed on May 21, 1925, by an earthquake at Kiohe in which numbers of people were killed, and shocks were also experienced in 1929 (see under EARTHQUAKE). An earthquake which, accompanied by a 7 ft. tidal wave, struck central J. and the is. of Shikoku on Dec. 21, 1946, was almost as severe as the earthquake of 1923, but the casualties were only 680 dead, and 4819 houses were destroyed.

*Flora.*—J. has a great and beautiful variety of vegetation, the colours of the foliage in spring and autumn being unsurpassed in richness and range of shades. Many Eng. gardens have gained in beauty by the brilliantly coloured shrubs brought from J. Oaks, laurels, conifers, walnuts, birch, chestnut, cypriped trees, and especially the weeping willow and maple grow freely, while everywhere the bamboo is seen growing in beautiful clumps. Among the queens of the flowering trees the plum must come first, so graceful in its growth and in its profusion of beautiful blossom and so wonderful in its richly coloured foliage. The cherry tree is even more beloved by the natives, who stand among the world's greatest and most artistic gardeners. The peach tree also blooms with amazing profusion, but all these three, the plum, the cherry, and the peach, bear only blossoms and no fruit worth mentioning. The Jap. pyrus, or pear tree, and the malus, or apple tree, have become familiar to Eng. gardeners, and are much prized for their gay colouring and cloud of blossoms; among the apple varieties the *Floribunda* is especially hardy and beautiful. The magnolia blooms in great perfection, also the azalea, chrysanthemum, peonies, iris, hydrangea, camellia, gum cistus, etc. We owe many of our most graceful and brightly coloured shrubs and flowers to Jap. gardeners. As a race they love the art of gardening, and at no time is the country devoid of blossoms of some kind. Their landscape and water-gardens are creations of beauty, and the miniature, or toy gardens, are an astonishing example of patient care and study. In fascinating little places a perfect tree such as a cedar may be a hundred years old yet dwarfed to attain only a few in. in height, though perfectly complete in its proportions. Lilies grow wild in great variety, and the lotus lily during the summer months covers the lakes and rvs. with its delicate

blooms. Ferns are found everywhere in great quantities; there are over 150 different species. The chief fruits are the orange, grape, pear, apple, loquat, peach, raspberry, and persimmon; they are, however, often rather tasteless and inclined to be tough. Vegetables are well cultivated, and many curious and palatable roots have been introduced from J. to Europe during recent years.

**Fauna.**—There are sev. kinds of wild animals. The black bear is found in Hondo and the brown bear in Yezo, the ice bear is an occasional visitor, carried down by the Arctic current. Badgers and foxes are numerous and are credited with

are a very few turtles (highly valued when caught), many tortoises, ten varieties of snakes, only one being venomous; lizards, frogs, toads, and newts are plentiful, and the giant salamander, which has been said to attain a length of 5 ft. Fish forms a very large part of the food of the Jap.; it is wonderfully plentiful both in the sea and the rivers and lakes. Among the chief are the broom, perch, mullet, mackerel, haddock, and salmon. The gold carp and the gold-fish, so prized for their beauty, are very numerous. J. is rich in beautiful insect life, the golden and the jewel beetle, and the many kinds of brilliant butterflies of tropical beauty; there are seven kinds



YOKOHAMA

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supernatural powers; monkeys abound all over the is., there are no rabbits, but hares are plentiful. Wild boars and stags, also antelopes, exist in the mountainous dists., otters and sea otters are numerous and much valued for their fur. The squirrel and the rat are very common, but there are no mice. The bird life carries a large variety, water fowl is very plentiful, wild geese, ducks, teal, and herons, especially the silver heron (beloved by Japanese artists), are seen in large numbers, also the kite, falcon, and sparrow hawk. Among the game birds the commonest are the ptarmigan, snipe, plover, quail, woodcock, and pheasant; there are two varieties of the latter, one known as the copper pheasant, being remarkable for its beautiful plumage. Eagles have been found but recently in small quantities. The crane is a sacred bird, being honoured as an emblem of longevity. Among the smaller birds the *Uguisu* comes first, a species of nightingale gifted with a very beautiful song. The cuckoo, lark, hoopoe, blue-bird, starling, wren, kingfisher, and various finches, etc., are all inhab. of the is. Among the thirty species of reptiles

of silk moths and from the cocoon of the moth *Bombyx Mori*, fishing lines are manufactured. The singing cricket and the cicada are common everywhere, also beautiful dragon flies. Spiders abound and attain gigantic proportions. In the lakes and rivers live many kinds of fresh water crabs and myriads of shrimps which are largely used for food.

The population, according to the census of Oct. 1, 1940, was 103,226,101 for the Jap. Empire and 75,114,303 for J. proper. By Aug. 1, 1917 repatriations and an increased birthrate had brought the pop. to 78,220,840. There are six ins. with a pop. of over 900,000: the cap., Tokyo (formerly Yedo) had in 1940 a pop. of 6,778,804 which by May 1947 had fallen to 4,797,230; Osaka (Honshu) 3,252,340 in 1910; Kyoto (Honshu, anc. cap.) 1,089,726; Nagoya (Honshu) 1,328,084; Yokohama (Honshu) 968,091; Kobe (Honshu) 967,234. Other important cities with 1940 pop. are: Fukuoka (Kyushu) 306,700; Yawata (Kyushu) 261,300; Kure (Honshu) 231,000; Sendai (Honshu) 220,000; Hakodate (Hokkaido) 207,000; Kagoshima (Kyushu) 182,000; Kokura

(Kynshu) 173,650, Otaru (Hokkaido) 154,000, Nikkato (Honsu) 135,000 Shimonoseki (Honsu) 133,000 Moji (Kyushu) 122,000, there are sixteen other towns with a pop of over 100,000.

Yokohama and Kobe are the chief ports and centres of foreign trade. The present pop of J consists of two distinct races the Ainus (or Ainu), and the Jap. The Ainu are probably the original race of the nation in Honshu. Evidence of another primitive people has been found so called pit dwellers who dug pits in the earth and roofed them over to live in. The Jap of the present day do not differ physically very much from the Korean and Chinese. The main part of the race is short of stature and very muscular but many types are distinguishable, the most important being an element of the Malay then follow the Manchukuo type the Mongol and lastly the Ainu. In the S. the people are more refined in appearance and the women (according to W. H. Hensley) are frequently beautiful while further N the tendency to prominent cheekbones and flat noses becomes more obvious. They are straight haired and usually very dark. As a race they are an exceedingly happy light hearted people. Children occupy an important place in every family. J has been called rightly the paradise of children. The present condition of women is based upon the principle of equality of sexes. As a wife and mother the Jap woman enjoys a position of freedom and respect. If single she may and often does, adopt children and becomes 'house head' of her legal family. The general character of the Jap woman is especially worthy of mention. They are unselfish, modest, kind hearted and patient, obedient as daughters faithful as wives, and devoted as mothers. Both men and women are by nature frugal and industrious and share in a passionate love of their country.

**Religion**—There is absolute religious freedom in J. The original religion of J is Shinto (the divine way) a mixture of nature worship and ancestor worship. It regards human people as naturally virtuous being descended from the gods and assumes that an individual's conscience is his true guide. The dead are ghosts inhabiting a world of darkness with the power of bringing sorrow or joy into the lives of the living. There are numerous gods and goddesses with very beautiful and charming legends attached to them. The prime divinity is Amaterasu the goddess of the sun. Her shrine at Ise is visited by crowds of pilgrims. There appears to be no definite idea of what kind of life continues after death, but the cult expects natural purity of life without promises of reward. Buddhism reached J. (552 A.D.) through Korea and the two religions became so intermixed it was difficult to disentangle them. Buddhism however, gradually absorbed the greater part of Shinto, though divided into various sects. In 1940 there were 3081 Christian preachers in J, and 2104 Christian churches belonging to various denominations. The Roman Catholic Church was recognised in

1941. Until the outbreak of war in that year there were 7 Brit and Jap and 3 Amer Protestant Episcopal bishops. The Jap usually adapt whatever creed they follow to their own requirements.

**Industries**—The industrial progress of the country made rapid strides up to the outbreak of war (1941). Labour is always cheap and plentiful. Machinery had been largely introduced. The principal manufactures are silk and cotton woven goods, cotton yarn, lacquered ware, chemicals and fertilisers, matches, earthenware, straw hats, matting, glass, cement, leatherware, brushes, woollen fabrics, knitted goods, porcelain, rubber goods, soap, vegetable oil, tools, bamboo ware, etc. Since the war the output of many of the chief manufactures has increased enormously. Before the First World War sugar refining was a growing industry. Before 1941 J had the most advanced industries such as mining, lacquer, and porcelain remained unchanged. The country produces enough coal for its own use. Lignite 37,700,000 metric tons in 1935. The production of iron is insufficient and was supplemented from China and Korea before the war. Gold is found and has been worked but not in great quantities. In 1935 the output was 22,198,000 grammes. Copper occurs in larger quantities and is a fairly valuable asset. The output in 1936 was 77,973,000 kilogrammes. The zinc output in 1936 was 39,066,000 kilograms. Non-ferrous metals 1,751,000 metric tons. Lead 8,883,000 kilograms. Pig iron 33,000 metric tons and steel 291,000 metric tons. Seventy per cent of the whole area is covered with forest. The forest area in 1935 was 1,531,000 ac. of which 19,000,000 ac. belonged to the State and some 3,000,000 ac. to the Imperial Household. From these forests a quantity of good timber is obtained. Large quantities of bamboo furnish material for building, ornamental work, and tools etc. The forests contain also cryptomeria japonica, Z. kowa, kiku, Pinus massoniana and Lawsonia imperialis which is used for fancy boxes, etc. Another smaller industry furnished by the forests is the cultivation of mushrooms. These are dried and exported to China and India. Camellia is another valuable gift from the forests though the industry is now chiefly in Manchuria where large camellia forests are found. The fishing industry is of very great importance. The value of it to the country annually naturally varies but roughly it has reached 227,292,000 yen for raw marine produce and 181,204,000 yen for manufactured. The industry of salt refining is of some importance.

**Agriculture**—Over 40 per cent of the pop are engaged in agriculture. It is J's most important industry but, owing to the mountainous nature of the country, not more than one sixth of its area is available for cultivation. Small holdings are the general rule, rarely exceeding 8 ac. (that is before 1941) but the break up of the large estates by the Amer in 1945-46 may have the effect of increasing the acreage of small holdings. The soil is not particularly fertile, and hard work and

hard living have made the rich rice fields what they are. Rice is, of course, the chief crop; it forms the prin. food of the people, and is also the basis of the national drink, *saki*. It is a summer crop, harvested in Sept.; the fields are flooded while the grain is young and then drained. The following are the chief products, the area under cultivation, and the production in metric tons, for 1938: rice, 3,248,000 hectares (9,633,000 metric tons); wheat, 731,000 hectares (1,388,000 metric tons); barley, 361,000 hectares (778,000 metric tons); rye, 418,000 hectares (782,000 metric tons); tobacco, 35,200 hectares (64,000 metric tons); and tea, 40,500 hectares (55,000 metric tons). Other important crops are millet, small red beans, buckwheat, rape seed, potato, sweet potatoes, indigo, hemp, sugar-cane, and peppermint, etc. The paper mulberry is extensively grown, its fibrous tissue being the chief material used for Jap. paper. Barley is grown with particular care as it provides the material for straw-plats, which is an important manuf. Stock-breeding is not extensive, pastureland being scarce. The growing liking for beef among the people before 1941 diminished the indigenous cat, but various foreign breeds were imported. Sheep and pigs were on the increase but the natives prefer beef. Goats are kept for their milk. The rearing of silk-worms is a very important asset to the small farmer. Jap. silk has long been famous. The chief silk-producing prefectures are Nagano, Gumma, Yamanashi, Fukushima, Aichi, and Saitama; thousands of families are engaged in its production and manuf. In 1940 the total number of cocoons obtained was 43,868,000 kwan, valued at 500,499,000 yen. The total raw silk produced in 1937 was 41,875 metric tons. The production of rayon in 1938 was 19,876,000 lbs. and exports of rayon yarn in 1938 were 21,984,000 lbs. valued at 17,845,000 yen.

**Railways and communications.**—Railways made rapid strides before the Second World War. There are now 15,254 m. of railroad, chiefly owned by the State. The first line ran between Yokohama and Tokyo, opened in 1872. After the war with Russia in 1901 the State nationalised the railways, and the growth and perfection of the system was still in evolution up to the war. It was decided, before the war, to make the standard gauge 4 ft. 8½ in. The work was expected to be completed in 1943, at a cost of 1108 million yen. Comprehensive plans were also made for the electrification of the State railways. The postal service is modelled on W. lines, and J. became a member of the international postal union in 1877. In 1938, 4,763,778,000 letters, postcards and newspapers and periodicals were sent and 80,520,000 parcels. There were 14,331 telegraph and post offices in 1938. Telegraphic communication commenced in 1867; much trouble occurred with the more ignorant section of the public who persisted in believing it was an evil thing. In 1884 J. joined the telegraphic union, and in 1938, 78,992,000 telegrams were sent. The telephone was adopted in

1877, a year after it was invented. Before the war there were 981,936 subscribers and 83,641 line m. Roads in J. are divided into three classes: state roads, prefectural roads, and vil. roads. They are generally well kept, and the gov. gave an ann. grant for assisting their upkeep and improvement. The first electric tramway was constructed in Kyoto in 1895. Before the war there were sev. electric railways and tramways running in the larger cities. Drainage improved rapidly, the usual W. methods of street scavenging being employed in all the tns. and cities. Cremation is encouraged with much success, and crematoria have been estab. in Tokyo and Osaka; other like places have been arranged all over the empire.

**Five Year Plan for Japan.**—Evidence of J.'s determination to restore her shattered economy was afforded by a five-year plan for national rehabilitation pub. in Sept. 1946 by the National Land Bureau of the ministry of the interior. The plan envisages the redistribution within J.'s reduced ter of a pop. estimated to reach 80,000,000 by 1950, the greater production of foodstuffs, the reorganisation and redistribution of industries, the reduction in the number of unemployed and the restoration of devastated cities. Of the estimated working pop. of 38,000,000, some 18½ million are to be engaged in agriculture and forestry, 600,000 in fishery, 6,300,000 in industry (making a reduction of 3,000,000 compared with the war years), 7,100,000 on building and road-making, and 5,000,000 in commerce. This leaves 2½ million unemployed, but they are expected to be absorbed as reconstruction progresses. J.'s urb. pop. is not to exceed 30,000,000. The remaining 50,000,000 are to be restricted to the farming, fishing, and mining vils. To support this pop. 27,000,000 koku of rice will be required on the basis of an ann. consumption of 1.08 koku per capita (one koku equals about 5 bushels). J.'s cultivated area, which in 1911 was about 6,000,000 chobu (one chobu equals 2½ acs.), is to be increased to 7,500,000 chobu by 1950. The land then under cultivation should produce 70,000,000 koku of rice, leaving 17,000,000 to be imported. No permanent industrial plan could be made pending the decision of the Allies on reparations and on the amount of industrial production to be permitted.

**Constitution and government.**—From the accession of the Emperor Jimmu in 660 B.C. until 1889, the country was ruled by an absolute monarchy, but in 1889 the emperor, after much study of the gov. of other countries, gave J. its pre-1945 (or Meiji) constitution. The emperor, called by foreigners the 'Mikado,' and by his subjects 'Tenno,' then possessed the rights of sovereignty and had executive power. He was assisted by Cabinet ministers chosen by himself. He was also advised on important state matters by a privy council, and exercised legislative power with the consent of the Imperial Diet, which consisted of two Houses, House of Peers and House of Representatives. The House of Peers consisted of

(1) male members of the Imperial family of full age, (2) princes and marquises over 30 years of age, (3) counts, viscounts and barons over 30 years of age, (4) persons over 30 years of age nominated by the emperor for meritorious services and erudition, (5) members of the Imperial Academy of Sciences and (6) representatives of the highest taxpayers nominated by their own class. General manhood suffrage came into force in 1925, under which, in principle, all male subjects over 25 years of age are electors, and those over 30 years are eligible for election. By a subsequent law, the number of the House of Representatives was fixed at 466. The 'Meiji Constitution' was superseded in 1946 by a new draft Constitution much more in harmony with the concepts of W. democracy. (See below under *History*.—*Japan's new epoch*.) Women suffrage had not come into being in J. before the war, but women were taking an increasing interest in social work and politics. Voting is by secret ballot. For local gov., J. is divided into prefectures, which are subdivided into municipalities. Modern jurisdiction has been introduced. There were (1941) 51 prisons and 104 detached prisons. The courts of justice are classed as: dist. courts, local courts, courts of appeal, and the court of cassation or supreme court.

**Commerce.**—Immediately before the Second World War J's shipping industry was well on the increase. Her exports grew in bulk annually, having increased fourfold in the last few years preceding 1941. The chief were silk, cotton, grain, and seeds, tea, and marine products, etc. The United States and China took the bulk of these, followed by Britain, while India bought two-thirds of the raw cotton. The export programme for 1946 permitted by the Supreme Allied Commander was to the value of 200,000,000 dollars, or about 25 per cent of the value of exports in the years 1934-1939. The chief imports were raw cotton from India, U.S.A., Egypt, and China; wheat from Canada, Australia, and U.S.A.; wool from Australia; rubber from Brit. Malaya; oil-cake from Kwantung Prov. and China; lumber from U.S.A., and piece goods, woollens, drugs, metals, rails, machinery, fertilizers, locomotives, etc. from the U.S.A. and Europe. Sugar is mainly imported from the Dutch E. Indies, Formosa and the Philippines; kerosene from America and the Dutch E. Indies, beans, peas, and pulse from China and Korea and rice from India, Fr. Indo-China, Korea, Thailand, and China. The chief exports are silk, cotton fabrics, cotton yarns, tea, knitted goods, camphor, straw plait, refined sugar, coal, porcelain, matches, earthenware, paper, glass and toys. The number of sailing ships engaged in trade before the war was 15,686 and the number of mercantile steamers was about 3600. Yokohama is the prin. commercial port, Kobe comes next in importance, then Osaka and Moji, among other ports are Shimonoseki, Tsunaga, Otaru, and Nagasaki (the last-named largely destroyed in the war).

**Education.**—Elementary education is free and compulsory for children from six to fourteen years of age. There were before the Second World War 25,840 elementary schools and a considerable number of high schools, army and navy schools, and departmental schools, which included the study of communications, marine industry, agriculture, and commerce. There are over 12,000,000 children in the elementary schools. High schools are also State-aided, and prepare for a three years' course at the Univs. There are high schools for girls, whose education is nearly as well looked after as that of the boys. There are also local



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schools and private schools of general instruction, and higher schools and certain colleges for girls, both technical and industrial. There are kindergarten schools for the little children of three years of age, but these are not compulsory or part of the national system. There are six State Univs.—Tokyo (2), Kyoto, Tohoku (at Sendai), Hokkaido and Kiushu (at Fukuoka), besides five medical univs.

**Army.**—From the twelfth century till the great revolution of the middle of the nineteenth century the fighting power was restricted to a hereditary military caste, the *samurai* or *bushi*, whose list, rise, and fall, is sketched in the section *History* below. Their weapons were the bow, the single-edged curved sword, and spear. The armour was of a special type which lasted unchanged till 1871. A combination of metal plates and scales sewn on leather, often highly decorated with elaborate embroidery, damascening, etc., it hung like a loose screen over the body of the wearer rendering him in appearance bulky and unwieldy. The *samurai* served as feudal retainers of the great families. Finally the great Taira and Minamoto families predominated, and on the fall of the former the Minamotos became the chief military power. The abolition of the *samurai*, the introduction of firearms,

following on the disasters of foreign interference, brought about a remodelling of the citizen (*heimin*, commoner) army on W. lines. Partly attacked in 1862, the problem was solved in various stages, with military schools, with three years' service with the colours, and four in the reserve, and organisation in military dists. By 1876 the army on a war footing reached nearly 50,000, and in 1877 successfully met the Satsuma rebellion and defeated the old samurai. The evolution of the army progressed rapidly, and the Sino-Jap. War tested the capacities of the new force; in the Jap. expedition to Peking in 1900 valuable lessons were learned. The Russian War saw 800,000 troops in the field. Improvements followed, and by the Imperial ordinance of 1909 the military forces were to consist of the Active Army, liable to serve abroad, and the National Army, both in the reserves. There were militia forces in some of the is. Service was compulsory from seventeen till twenty. Two years' service in the active army, 'geni-ki,' was compulsory for the absolutely fit, five years four months in the reserve, 'yoti,' ten years in the second 'hon,' 'ohi,' and two years eight months in the home defence, 'kokumin.' The normal strength of the active army before the Second World War was 15,000 officers and 242,000 other ranks. The air personnel for the army numbered in 1938, 10,200 organised in 21 pursuit squadrons, 12 reconnaissance squadrons, 12 bombing squadrons and a balloon corps. The number of aeroplanes in service was 1500. For the war with China 7 classes of reserves were called up in 1938, giving the army a strength of 850,000 after making up losses. During the 1939 campaign more than 16 divs. (over 300,000 men) were engaged in S. China. The Jap. is. were divided into military dists. corresponding to the divs. of the army, and the dist. was the unit of administration as well as of territorial command. There were normally 17 divs., 4 independent cavalry brigades, 2 independent regiments of mt. artillery, and 8 regiments of heavy field artillery. The military budget for 1941-42 amounted to 1,387,000,000 yen, exclusive of sev. appropriations for the war with China.

**Navy.**—In the early days, as we know from the dread of foreign invasion and the wars with Korea and Kublai Khan, J.'s navy was insignificant. In 1635 the policy of isolation led the Tokugawa gov. to forbid the building of any vessel capable of crossing the ocean, and the foreign aggression of the middle nineteenth century showed J. defenceless before foreign sea-power. The nucleus of the navy was formed with a gift of two war vessels from the Dutch and Queen Victoria, and two purchased from the Dutch. Gradually a small force was organised, trained by Brit. officers under Sir Archibald Douglas. The fleet played a part in the Satsuma rebellion, and later J. began herself to build. Her first ironclad was built in England, 1878. At the opening of the war with China, the navy consisted of 28 vessels,

and 29 torpedo-boats; there were no battleships, while the Chinese possessed two powerful armoured ships of the line. The naval victories resulted in immediate building on a large scale, chiefly in Europe, and the Russian War saw her with 6 battleships, 8 armoured cruisers, 44 other cruisers, and 100 destroyers and torpedo-boats. The crushing defeats of the Russian navy off Port Arthur, Togo's victory in the straits of Tsushima and the part the navy played in the First World War have proved the naval power of J. in the Pacific. The statistics for 1940 gave 10 battleships, 7 aircraft carriers, 35 cruisers, 5 coast defence ships, 103 destroyers, 12 torpedo boats and 65 submarines. Under the London Treaty, which precluded the replacement of cap. ships from 1931 to 1936, the then existing ships were to be modernised and by 1941, the existing cap. ships had mostly been modernised. Great secrecy had been practised concerning programmes of construction, with the result that little was known about the bigger warships being built immediately before the outbreak of the Second World War; but probably some 5 or 6 battleships of about 45,000 tons, armed with 16-inch guns were in hand in 1941. Four armoured ships of 15,000 tons with 12-in. guns were also under construction. Two large aircraft carriers, sev. cruisers, and a large number of destroyers and submarines were also being completed. The active personnel numbered 107,000. The gross amount of the naval estimates for 1941-42 was 1241 million yen.

**Finance.**—The ordinary revenue for the year 1944-45 was 14,083,000,000 yen and the extraordinary 36,884,000,000 yen; ordinary expenditure, 20,173,000,000 yen, extraordinary, 30,794,000,000 yen; total revenue and expenditure balanced at 50,967,000,000 yen. The internal debt (as at Feb. 28, 1944) was: Consolidated, 72,856,000,000 yen; floating, 1,909,000,000 yen; total, 74,765,000,000 yen. The external debt (March 31, 1943) was stated at 1,222,000,000 yen (the exchange value of the yen in London in 1941 averaged 1s. 2½d.). Prin. sources of the revenue before the war were income tax, land tax, liquor tax, business tax, sugar excise, and tax on consumption of textile fabrics. J. was a protected country and collected a large revenue from customs. In 1939, her imports amounted to 2,917,000,000 yen, and her exports to 3,576,000,000 yen.

**Dress, customs, etc.**—The costume of the country is picturesque and distinctive, though fast becoming Europeanised. The men wear a silk or cotton shirt with an under jacket in the winter, and a wadded outside gown (*kumomo*) or perhaps two in the coldest weather; a narrow sash is worn round the waist, and for ceremonial purposes wide trousers and a stiff coat are used; these clothes are usually made of silk, and are often in beautiful colours with handsome embroideries; the head is usually bare, though occasionally a large straw hat is used; socks and sandals cover the feet, and wooden clogs are worn in the wet weather. The women wear a silk

shirt and a *kimono*, kept in place by a narrow belt over which is worn the big sash or *obi*. The materials are usually costly and beautifully embroidered and are handed down from mother to daughter. Their hair is very carefully dressed and piled with combs and flowers. The children are gaily dressed in the same fashion as their parents. The chief food of the country is rice, and this is served at all three meals, cooked in various ways with fish, eggs, vegetables, and many kinds of pickles. Soups made of fish, vegetables, or chestnuts are popular. Chopsticks are used instead of knives and forks. The drink called *saki* made from fermented rice is a favourite beverage; large quantities of tea are drunk, and the ceremonies attending tea-parties, etc., are both ancient and interesting. The tea-ceremony is believed to have been introduced into J. from China, A.D. 805, and the drinking of tea appears to have started as a more or less religious institution among the Buddhist priests; about 1330 it was adopted by the Daimyos and wealthy nobles. At their famous tea-parties each guest had to guess where the tea they drank had been produced, and if they guessed right they were given one of the valuable presents which adorned the room where they were entertained. These gifts, often rare and beautiful, would afterwards be presented to the singing and dancing girls who entertained the tea-party. It became an exaggerated craze among the upper classes, and was carried to such an extraordinary length that even large fortunes were dissipated. The tea is made in many forms; in one, the leaves are reduced to a powder and the liquid appears as thick as soup; another thinner mixture is known as *usu-cha*. The drinking of tea is even to-day always formal and ceremonious, and each action and gesture is arranged by a code of rules. The usual method of getting about the tns. is in a *jinrikisha*, or little cart pulled by a man, who charges so much a m. Every one, men, women and children, bathes frequently, some sev. times a day. In the winter the hot baths help to keep the people warm, especially the children, who are accustomed to being bathed sometimes five or six times in one day. In Tokyo there are over 800 public baths. The geisha or singing girls are a class well known to the European both in literature and drama. They are usually apprenticed in their seventh year and can rarely reach independence unless they marry. At one time few Jap. social gatherings would have been considered complete without these pleasing entertainers, but the custom is now dying out under the influence of modern W. styles of entertainment.

**Language and Literature.**—With the exception of that of the Luchu Is., no other language claims relationship to the Jap. Some authorities include it in the 'Altaic group'; it is an agglutinative tongue. Many Chinese words are employed, especially for new words, such as 'bicycle.' It is exceedingly difficult to learn, and a great deal of Chinese must be understood as well. There are practically

three languages to learn, the ordinary, the polite, and the written, which all differ in an extraordinary degree. The literature of the country is frequently written in Chinese, and until the Chinese ideographs were known by the Jap. there was no written literature. Illiteracy is only ten per cent of the nation in J. proper. Eng. is the language of commerce and is compulsory in the high schools.

The earliest book we know of is the *Koiki* (Record of Anct. Matters), A.D. 712. It contains a story of the creation and the heavenly birth of the Jap. race, with a list of some of the early emperors, with sev. songs included; much of it is dull and crude. The next book, written A.D. 720, is the *Nihongi* (Chronicles of J.). It was written entirely in Chinese, and from that time most of the literature was pub. in Chinese. Another book about A.D. 760, is called the *Manyoshu*, or *Collection of the Myriad Leaves*, an anthology of the anct. poems. There are sev. lists, notably the *Nihon Gurashi*, a few law books, and a great deal of poetry. The classical romances are exceedingly charming, such as the fairy story entitled *Takatori Monogatari*, etc. Among the diaries is one called *Murasaki Shikibu Niki*, written by a Jap. authoress, and very difficult to read. Women have always largely influenced the literature of the country, and have added many works of merit and charm. During the time of peace under the rule of the Tokugawa Shoguns, philosophy was much studied, while popular romances and drama became common. They were, however, mainly influenced by the Chinese, and were often extravagant and horrible, but not a few were realistic and humorous. After the Restoration an enormous quantity of Eng. and Fr. works were trans. and pub., naturally influencing the literature of the time. Of the modern authors there are four who should be mentioned: Robun Koda, Futabai Hasegawa, Ogai Mori, a surgeon-general, and Ichijo Higuchi who borders on genius in her life-like tales; she died very young; her stories were filled with charm and true to real life.

Later writers of the twentieth century who may be mentioned are Mushakji, Arishima, Shiga, Nagayo, Nogami, and Nakajo; the naturalistic writers Oguri Tayo, Kosura Tagai, Yanagawa Shunyo, and Ozaki Koyo and Koyo and Kunikida Doppo (d. 1908), Tosan Masamune, Shimamura, Shinazaki, Iwana, and Tokida, who are all writers of the naturalistic school. There were, before the Second World War, sev. newspapers and journals, and some Jap. newspapers printed in Eng. Yokohama produced the first daily paper, 1871, also the first Eng. jour., *The Japan Mail*, 1866. The Jap. Press was unfortunately hampered by vigorous censorship. The No plays are the classical drama of J. Historical dramas and comedies of contemporary life are the most popular, and many European works have been trans. and adapted. Tsubouchi is a twentieth century dramatist of repute. For greater detail see DRAMA. Jap. music is at present in its infancy, and to the ears of Europeans seems neither pleasant nor melodious.



**Art.**—The architecture of the country has never attained the great or grand; small things are made perfectly in J., but not so often very large things. Quaint grace and wonderful curves may be met, but no wonderfully proportioned and impressive building greets the stranger; no domes or minarets, or massive structures, but lightly-built houses and temples of wood and thatch, or sometimes tiled roofs. Walls are scarce, the slides and diva, of houses being of opaque paper screens, replaced in winter by wooden doors that slide into their places. Even the great temples are composed of wood and uniting, the wood carving being wonderful and beautiful. The view of a tu. from a height appears extraordinarily flat and uniform, only an occasional pagoda rearing its beautiful head among the trees. The Jap. architect excels in beautiful detail. In rebuilding the cities that were destroyed by earthquakes J. is following, to a considerable extent, the W. form of architecture. The few concrete buildings that have been in existence in J. for some time have withstood shocks fairly well.

Jap. art is essentially realistic, almost impressionist. Studies from nature are perfect and accurate. The art of painting has existed in J. for twelve centuries. Since 1897, when national treasures became protected, and reproductions were pub., the real art of the nation has become better known. The oldest painting of whose existence we know is a mural decoration in the hall of the temple of Horyu, near Nara, attributed to a Korean priest named Doncho about the sixth century. It clearly shows the colouring and construction of a late example of Buddhist art. The first famous native artist of whom we know was a noble named Kos-no-Kansoka, at the court of the Emperor Seiwa, about A.D. 850; very few of his works have survived, and those that have are chiefly conventional in design, but most perfect in their blending of colours. His descendants who continued to the close of the fifteenth century were famous artists, and founded the native school of Wagwa-ryu; the followers of this particular branch of painting delighted in quaint animals and insects, such as grasshoppers, frogs, butterflies, and hobgoblins, etc., which they represented with extraordinary charm and vitality. During the fifteenth century two Buddhist priests became very famous, (ho Denshu and Josetsu. The former painted religious subjects, and the latter landscapes and figures. A little later came Kano Masa sobu, probably a follower of the Tosa or Yamato-ryu school and believed to be the pupil of Josetsu, who also instructed Shubun and Sesshu. These three became the leaders of three famous schools of painting. The Kano school has outlived the other two: it is still followed to-day, with its generous breadth of idea, its extreme simplicity, and its brilliant colour schemes.

A new development of art began with Hishikawa Moronobu (d. 1713): his pictures are filled with delicate work; he gave J. her first beautiful wood-engravings

and illustrated books. About 1775 Okyo became famous for his representations of animal life. Following the Kano school came Ogata Korin (d. 1718), a man who left his eccentric and vivid influence on the works of his many pupils; he also excelled in lacquer work. The year 1889 saw the last of the old schools; Kyosai, whose favourite themes were ghosts and skeletons, ended the anct. traditions. The W. style of painting is gaining influence in J. but so far no Jap. artist painting in this style has produced any work of outstanding merit.

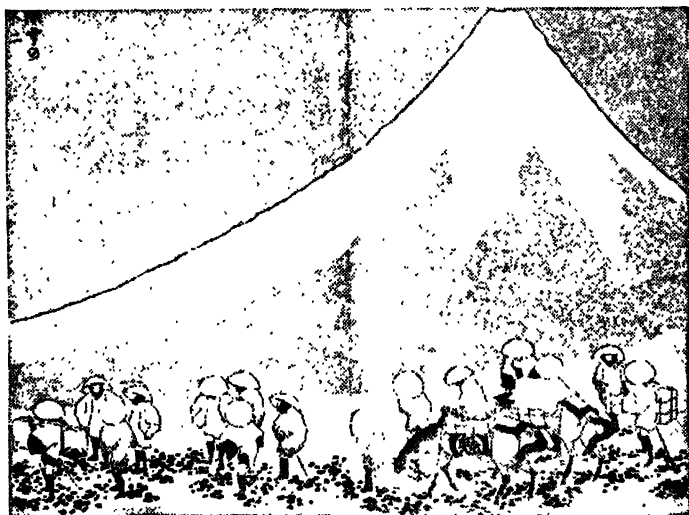
Sculpture and carving in metal and wood have been a highly developed art in J. for twelve centuries; many of the temples are store-houses of fine examples, going back as far as the sixth century. Sacred images were not the only subjects for the glyptic art, bells, vases, candlesticks, lanterns, arms, and armour, all being objects for the artist's skill. Stone was never used to any extent, but bronze, ivory, and wood have always been employed from the earliest times. The most perfect anct. bronze is the image of Bhaisia diyaguru in the temple at Nara. One of the most famous of the country's sculptors was Hidari Jingoro (d. 1634). Some of his chief works were the gateway of the temple at Kyoto and the decorations of the mausoleum of Iyeyasu at Nikko. The elaborate metalwork of the sword hilts, when every noble and samurai carried a sword, was for over 400 years a wonderful work of art. Whole families became sword sculptors, and many of these were held in great esteem, while the swords themselves were handed down as family heirlooms. The art of inlaying with gold and silver became highly developed at a very early time. A great deal of their bronze work is very fine; one particular kind which colours to a golden yellow is remarkable to a degree, and the Jap. have excelled in this particular branch of metalwork. The common domestic flower vases, alcove ornaments, and incense burners are often of exceeding beauty of design and workmanship. The great Bronze Buddha at Nara, and the huge Amida at Kama-Kura, are a proof of their early skill in casting large objects. Another branch of art grew quickly with the use of tobacco, and this was the carving of *netuke*, or buttons employed to suspend the tobacco pouch from the girdle, also the bowl of the pipe and the pouch clasps. Following the *netuke* came the *okimono*, little ornaments, wonderful copies of crayfish, dragons, eagles, birds, and the like: some were of large size, but many of the most perfect are tiny little productions to delight either an artist or a child. Wood-carving has, from very anct. days, been one of J.'s greatest arts. The temples bear the records of centuries of exquisite work, but seldom the names of the artists. The smaller wooden figures of the Buddha, familiar to the European, gilded and carved with such placid faces, in folded drapery, with lotus petals carved for their canopy, are graceful examples of the work of the Jap. wood-carver. The art of the wood-cut was introduced into J. from China, and

was used for the printing of texts and pictures. The name of Hokusai Nakajima Tet-Sujiro (d. 1849) is well-known in this field; his thirty-six views of Mt. Fuji are of remarkable beauty. He illustrated numberless books, and represented both animal and vegetable life with accuracy and vividness. He was followed by Hiroshige (1797-1858), who depicted every aspect of his country in numerous sets of prints.

The art of lacquering was a gift from China at the beginning of the sixth century. Plain black lacquer was the first achievement, later mother-of-pearl and

feather, or feature makes their productions anything but impressionist. Their whole art, just as the real national character, stands out for perfection in one main object and disregard of all superfluities.

*History.*—The racial origin of the Jap. people is still a matter of dispute. The anct. chronicles of the country tell that the god Ninigi descended on an E. peak of the mt. Kirishimayama, on the Is. Kyushu, as the forerunner of their first emperor named Jimmu, about 660 B.C. Before this date they have no written hist. The Ainu, or Ainos, appear to have



ONE OF THE FAMOUS VIEWS OF MOUNT FUJI BY HOKUSAI

gold dust decorated the work, followed by conventional patterns, and still later by floral designs of great beauty. The interior of the temples and castles were adorned with the most elaborate lacquer work. In all the finer examples of this art gold predominates, and the effect is rich and soft. Enamelling is another development of the modern Jap. artist. Today vases, bowls, censers, etc. can be obtained in the finest cloisonné enamel work. The translucent enamels are wonderfully decorative, both in delicate design and exquisite colouring.

According to a survey carried out by Allied H.Q. only 38 of J.'s 5703 greatest national art objects were damaged or destroyed by air raids during the Second World War. Jap. art must always appear different from the art of other countries; in one sense it is impressionist by reason of its choice of subjects and want of detailed background; yet in another sense the perfect painting of every petal,

been the inhabs. of J. when the present people migrated from the adjacent continent, though which part they came from is not proved. The Ainu came from Siberia, and they appear to have found a primitive aboriginal tribe who dwelt in pits and who had been (if they were not then) cannibals. The Ainu drove these people N. and estab. themselves on the main part of the is., but there are not many left now. They were formerly a fierce race, but centuries of oppression have reduced them to degeneracy (see also *AINU*).

Of the coming of the Jap. and the first fierce fights for supremacy very little can be written. The real known hist. begins with the Emperor Jimmu Jemmu; the date ascribed to his accession is 660 B.C., but it was probably later; from him all the emperors of J. are descended. In A.D. 200 a warrior empress called Jingo invaded Korea, crossing from J. with a large fleet and successfully subduing a part of Korea. About A.D. 500 the inhab.

became properly one nation, a mixture of Ainu, Mongol, and Malay, ruled by one emperor. Down to 670 the records are so vague and steeped in legend that it is impossible to say accurately what occurred. About 670 the noble family of Fujiwara became prominent. They governed as agents of the emperor, spending his revenues and oppressing the people. It became customary for the empress to be chosen from their daughters; thus the early training of the royal children became one of the privileges of this powerful house which, in fact, though not in name, ruled the empire. They gave J. many scholars and statesmen, but being without soldiers or money, except for the imperial revenues, they were gradually ousted by the warrior families of Taira and Minamoto. These two families were at constant war with each other. The Taira were finally exterminated by the Minamoto, about A.D. 1180. For some years after this Yoritomo, the chief of the Minamoto, ruled the empire under the title of Sei-i-tai Shogun. He was merely a sacred personage during this time, and accordingly worshipped and flattered and given all he could desire, but without power. Yoritomo died in 1199, and the family of Hojo, who acted to the Shoguns in the same capacity that the Fujiwara had acted to the Imperial family, became the most powerful. The emperor of China, Kublai Khan, demanded that J. should recognise his suzerainty (1260); on their refusal a large fleet was sent which was destroyed off the coast of Kyushu in 1281, leaving J. free. The Hojo family became enfeebled by their luxury and indolence and an organised revolt succeeded in driving it out and restoring power to the Emperor (Go-Daigo, 1331, who, however, was obliged to abdicate, and fled to the S., pursued by the soldiers of Ashikaga Takauji. Much trouble and petty warfare ensued, and another branch of the Imperial family supplied a sovereign; the Ashikaga family held the Shogunate till 1565. But these internal struggles reduced the country to a wretched condition—aggravated by the rapacity of the great fortified monasteries of the Buddhist monks.

From 1565-1600 only the strongest warriors could hold any real power, and thus it came about that a low-born groom became the first man in the empire. This man, named Hideyoshi, was noted for his ugliness, his quick wit, and his courage. He is one of the national heroes of J., and artist and author have given him undying fame. One other man, Ieyasu, a common soldier, a rising young member of the Tokugawa family became powerful at the same time. These two men came to an agreement and between them overcame the remaining great warrior families. On the death of Hideyoshi, Ieyasu fought for the supremacy and finally gained it in the great battle of Sekigahara. Afterwards he claimed the title of Shogun, and thus founded the line of Tokugawa Shoguns, who ruled till 1868. Kyoto had formerly been the cap. but Ieyasu substituted Yedo. The military families

(known as Samurai) were now subject to the closest inspection; their estates and incomes were assessed by the Shogun's officials. The Daimyo or feudal chief generally held a castle occupying a commanding position. At this period the right of wearing a sword was the highest privilege, wealth was of little consideration, honour, courage, loyalty, and filial piety ranking first in the code of ethics followed by the Samurai. The relations of the Daimyo to the Samurai corresponded to those of the medieval European baron, knight, and squire. Ieyasu established a military rule of the empire. He stands among the greatest of J.'s statesmen, and his system of gov. assisted greatly to increase the wealth of the country.

Under the early rule of the Tokugawa Shoguns foreigners were welcomed and regular intercourse between Jap. and Europeans began in the sixteenth century. Commercial interest had commenced with the Portuguese about 1542, from whom the Jap. bought arquebuses.

The Rom. Catholic Church now sent a missionary expedition of Jesuits, headed by Francis Xavier, to J. The Jesuits were well received and made good progress with their converts, but their zeal and energy led at last to their being denounced as agitators. Some Franciscans arrived and quarrelled with the Jesuits, and following this the Dutch commenced trading with J.; they, being rigid Protestants were naturally unfriendly with both Sp. and Portuguese. The Jap., amazed at the unedifying spectacle of all the Europeans quarrelling violently among themselves, became alarmed, the creeds of the foreigners appearing to them merciless and fanatical. Therefore the simplest method of curing this condition was applied: the Spaniards were expelled in 1621, the Portuguese in 1639, and the native converts who refused to give up this foreign creed were exterminated. The final tragedy of these ill-fated persons took place at the castle of Hara, known as the revolt of the Shimabara. The Dutch traders were not expelled, but were subjected to severe and humiliating restrictions. No general dealings with foreigners were allowed. Ocean-going ships were no longer permitted to be built. The first Eng. man to reach J. was one Wm. Adams (d. 1620). He was pilot on a Dutch trading vessel, and stress of weather drove the ship *Charity* to the is. of Kyushu. He was summoned to Osaka, and Ieyasu, appreciating his knowledge of ship-building and ships, refused to allow him to return home. He was presented with an estate at Hemu near Yokosuka, married a Jap. wife, and became known and beloved as Anjin Sama. His memory is preserved by the name of a street in Yedo and an anniversary festival on June 15.

The country now enjoyed years of peace and increasing prosperity, and the Tokugawa Shoguns, following up the policy of Ieyasu, succeeded each other undisturbed. Slowly but inevitably, however, the more intellectual classes began to regard the absolute power of the Shoguns as reactionary and tyrannical. In

1853 the United States sent Commodore Perry with four ships of war to open diplomatic relations; a Russian ship arrived in the same year on the same errand. J now woke up to the folly of having isolated herself from the progress of other countries. Commodore Perry made his proposal and sailed away, purposing to return in a few months. J wildly flung all her energies into feverish attempts to build forts, collect troops, and build ocean going ships once more. Ultimately they agreed to Commodore Perry's demands for Amer. trade and safety for shipwrecked sailors. Perry showed them a model telegraph and a model railway, which delighted and amazed the Jap. The coming of Perry and the subsequent awakening of the country led to the downfall of the Shogunate. The Daimyos were culled together to advise, but they adopted the desperate attitude of resisting the foreigners by force. The Shogun understood the position only too clearly; he was a far sighted, able statesman. His decision was to sign the treaty with Perry and further treaties with Russia, England and the Netherlands. In signing these treaties the Shogun knew that he signed his own downfall. The Daimyos rose against him and expelled the foreigner, became the popular cry. The Daimyo of Hikone, who supported the Shogun, was murdered by the Daimyo of Mito. A Brit. subject named Richardson was murdered by the retainers of the Daimyo of Satsuma; vengeance was taken for his sake, the city of Kagoshima belonging to the Satsuma was bombarded and utterly destroyed. The Choshu chief who commanded the entrance to the inland sea at Shinonowaki fired upon foreign ships, the emperor having given him an edict without the knowledge of the Shogun. A squadron of Brit. men of war demolished the forts of the Choshu and destroyed his ships. A fine of 3,000,000 dollars was imposed upon the Choshu, his cap being in the hands of the invaders while he was in revolt against the Shogun who therefore could not collect the debt. Sir Harry Parkes, entrusted with Brit. interests in J., arranged that part of the debt should be remitted on the ratification of the treaties. This ended the power of the Shogun. A foreign fleet was anchored off the entrance to the sacred city of Kyoto, where the emperor resided. That monarch dismissed the officials whom the Shogun had appointed to carry out the negotiations, and the Shogun resigned in 1868, and was succeeded by Keiki the last of the Tokugawa rulers.

From this time on J. began to take her right place among progressive nations. The emperor became the head in fact and not in theory. In 1871 an imperial decree abolished local autonomy, the feudal system was to be a thing of the past. In 1878 the pensions of the Samurai were commuted and swords were forbidden to be worn. The Satsuma clan alone remained conservative and rose against the gov. (Jan.-Sept. 1877) in a short-lived revolt. This ended further trouble with the Samurai, many of these men, loyal

to their creed of honour, retired to the mts and died by their own hands, suicide under the name of *Hara-kiri* being an honourable death. This custom had always been followed by the Samurai in cases of hopeless trouble or from the wish to follow a dead superior. The wives of the feudal nobles and Samurai also occasionally despatched themselves when honour or loyalty demanded it of them.

The country now set herself the difficult task of thoroughly learning and practising the institutions of Europe and America. Some fifty-five men by no means all noble commenced the work of reconstruction. Many were murdered, some were executed and not a few broke down with overwork. Among the greatest names honoured evermore by their country are Prince Ito who framed the first constitution for J. and who died by the hand of a mad assassin in Korea, Saigo Takamori, Itagaki, Okubo, and Kido. The next period is known as the Meiji era. Englishmen were employed in the construction of railways, telegraphs, etc. and in the organisation of the navy; Amers supervised her system of postal service and her agricultural arrangements and her education. Japanese trained her soldiers in modern tactics and learnt the laws while Germans assisted with medical science and local gov. In 1899 the Emperor Mutsuhito gave J. her pre-war constitution.

The next difficulty the country had to face was the question of Korea, that peninsula was too close to the vital part of J. to be a comfortable home for another nation. China was not anxious to see Korea occupied by the Jap any more than the latter were to see it governed by China. Matters reached a crisis in July, 1894 and war was declared between the two countries. The struggle became a succession of victories for J. First a naval encounter took place between three Chinese battleships and three Jap. cruisers. One Chinese ship was taken, one shattered and rendered useless, and the third escaped badly damaged. The first land victory took place at Pyongyang. The Chinese lost 8,000 men and the Jap. only 700. Then came the naval battle off the mouth of the Yalu R. which proved a disastrous defeat for China. J. then seized the Chinese naval ports of Yalu Port, Arthur and Weihaiwei. The Chinese commander Adm. Ting, committed suicide unable to bear the taunted disgrace of defeat. This was the end of the war. The treaty of Shimonoseki (1895) declared Korea absolutely independent, ceded to J. part of Manchuria, Formosa and the Pescadores, compelling China to pay 200,000,000 taels indemnity. J. a victory was hard won, having cost 20,000 lives and £20,000,000. The interference of the European Powers and her own crippled condition compelled her to give back to China the ter. on the mainland, together with Port Arthur. In 1902 a defensive alliance was concluded with Great Britain. The gradual encroachment of Russia in Korea and the concessions granted to that country by

China were watched by J. with increasing anxiety. In 1904 matters came to the expected crisis, and J. declared war against Russia (see RUSSO-JAPANESE WAR). To the amazement of Europe, Russia was defeated, peace was concluded in 1905, and a treaty was signed at Portsmouth, New Hampshire, U.S.A. In 1905 the new Anglo-Jap. treaty was signed in London for the purpose of maintaining peace in E. Asia, ensuring the integrity and independence of China with the policy of the 'open door' for all nations, and for mutual defence of the territorial rights of the two contracting powers in the Far E. and India. In 1911 this was renewed for ten years with modifications. The integrity of China was the basis of agreements with Russia and France (1907), and a common policy in regard to Far E. and Pacific questions was formulated in identical notes between J. and the U.S.A. in 1908. In 1910, 1911 and 1912 agreements were signed with Russia in reference to China, Manchuria, and Mongolia.

The great Emperor Mutsuhito died in 1912; he had reigned for forty-five years. On his accession he had inherited a petty Oriental state in which he left his son an empire which had taken her place among the world's great nations. A pathetic incident of the Jap. characteristic loyalty and devotion marked the day of the emperor's funeral. General Nogi and his wife committed 'honourable suicide' according to the old estab. custom. The emperor's third son, Yoshito Harunomiya, thirty-three years of age, succeeded him, and became known as Emperor Taisho. At the beginning of his reign, the ministry of the Marquis Satomi came to an end, being split upon the decision of the war minister, Gen. Uchihara, to keep two army divs. in Korea, where there had been a conspiracy against the Jap. Governor, Count Terachi. The offer of Prince Katsuri to form a ministry was not accepted by the Lower House, and Katsuri thereupon formed a new party, called Rikken Doshi-Kai or the Constitutional Crusaders' Association, but in 1913 he died of cancer. In Feb. 1913 the Yamamoto ministry came into power, but soon after fell owing to the Naval Scandal, aroused by the fact that bribes had been accepted by Jap. officials from the Siemens-Schuckert Company over the building of a Jap. battleship. After an interval, in which Viscount Kiyoura tried in vain to form a Cabinet, Count Okuma came into power on April 11, 1911, with the assistance of the new Doshi-Kai party. Baron Kato was made foreign minister, and after the outbreak of the First World War in Aug. 1914, he enunciated the national policy that 'J. had no desire nor inclination to become involved in the present conflict, but she believed she owed it to herself to be faithful to the Alliance (i.e. with Great Britain) and to strengthen its foundations by ensuring permanent peace in the E. and protecting the special interests of the Allied Powers.' On Aug. 15, an ultimatum was issued to Germany demanding that all Ger. battleships should be withdrawn from Jap. and Chinese

waters, and that the whole of the leased ter. of Kiao-Chiau should be delivered up by Sept. 15 and ultimately restored to China. Having received no reply from Germany, J. declared war on Aug. 24. On Sept. 2 the Jap. army landed in Kiao-Chiau and, having been joined by a small Anglo-Indian force, commenced the siege of the forts, which, by Nov. 7, surrendered. On Nov. 16, the Allies occupied Tientsin (q.v.). Meanwhile the Jap. fleet was active in the Pacific, destroying the prestige there of the Ger. navy and capturing the Carolines (the Marshall, and the Marianne is.

On Jan. 18, 1915, J. surprised the world by issuing to China the unwarranted 'Twenty-One' demands (see also under CHINA). These were divided into five groups, of which the last aroused the most bitter controversy. Among other things it demanded that the Chinese should employ Jap. advisers in their affairs, that the Jap. should have the right to build hospitals, schools, etc., in the interior, that a jointly-administered Jap. and Chinese arsenal should be set up, and that the control of certain railways together with the right of construction should be in the hands of the Jap. Under protest this group was omitted, but a revised list together with an ultimatum of acceptance was presented to China in April. Bitter resentment against J. prevailed in China for some years over the 'Twenty-One Demands', they also brought J. into difficulties with the U.S.A., which were only ended by an agreement between the two countries signed on Nov. 2, 1917.

By the treaty of Versailles 1919, J. received, under mandate, the former Ger. colonies, the Caroline, Marshall, Marianne, and Pelow is., together with Kiao-Chiau. The difficulty with China, resulting from this latter award, was the subject of the Pacific section of the Washington Conference (q.v.). Kiao-Chiau, together with other former Ger. ter. in Shantung, was returned to China, while a treaty of Naval Disarmament between J., Great Britain, France, and the U.S.A. was concluded, and, in this, the former Anglo-Jap. Alliance was merged. In domestic affairs, both during and after the War, J. was undergoing extremely rapid industrial development but had not escaped war 'profiteering', and this, coupled with the increased cost of living, caused resentment and rioting. Before 1916 trade unions were practically unknown in J., but after that year they became increasingly powerful. Discontent among the workers found expression in strikes, of which there were 417 in 1917 and nearly 500 in 1918. The rice riots of that year brought about the downfall of Terauchi, who had succeeded Okuma as head of the gov. in 1915. A new gov. was formed with Takashi Hara, a commoner, at its head. Factory laws concerning women and children were passed, and welfare work was instituted. After the fall of the Russian Imperial gov., J. assisted the Allies in enabling the Czechoslovakian army to escape from Siberia; and when the Allied troops were withdrawn, the Jap. remained in Siberia for some time after the war. The Jap. in

Siberia suffered at the hands of the Bolsheviks, and it was not until 1923 that the Jap. commenced the evacuation of their troops.

At the Versailles Peace Conference, J sought to obtain the recognition of racial equality, but the required unanimous vote was not forthcoming. In 1923, the sympathy and help of the world were extended to J to repair the damage caused by the terrible earthquake of that year (see *supra* and under EARTHQUAKE). It may be mentioned here that the next serious earthquake in J. was that which struck central J. and the Is. of Shikoku on Dec. 21, 1946, causing damage over an area 400 m. by 150 m. or about five-sixths as severe as that of 1923. In Sept. 1923, a gov. was formed by Yamamoto, after an interval of unstable ministries following the assassination of Hara on Nov. 4, 1921. In Dec. of 1923, however, the attempted assassination of the Prince Regent caused Yamamoto to resign, and a new Cabinet was formed by Viscount Kiyoura. This gov. was unpopular, and fell the following year, owing to the resentment aroused in J. by the Amer. Immigration Law, passed in May 1924, forbidding Asiatics to enter the U.S.A. General elections were held in J. at this time, and Viscount Takaatsi Kato came into office with a gov. which was a Coalition between the *Seiyun-Kai*, or Constitutional Political Association, and the *Kenmei-Kai*, which party had arisen out of the *Doshu Kai*. The prin. achievement of this gov. was in granting universal suffrage to all men over the age of twenty-five. On the death of Kato, the premiership fell to Wakatsuki. On Dec. 25, 1926, the old Emperor Tai-sho died, and was succeeded by the Crown Prince, who had acted as Prince Regent since 1922, and now became the Emperor Hirohito. In the succeeding years, J. was mainly occupied with reconstruction at home and the rebuilding of Tokyo, and in foreign affairs with the problem of naval security. Much criticism was levelled at the foreign minister, Baron Shidehara, on the grounds that the ratios with regard to naval strength accepted at the London Conference were inadequate for the protection of J. (see LONDON CONFERENCE). In 1934 J. gave notice of termination of the Washington Treaty of 1922 (see WASHINGTON TREATY OF 1922), a step which, coupled with J.'s aggressive policy in Manchuria, excited grave apprehension (see also CHINA—History).

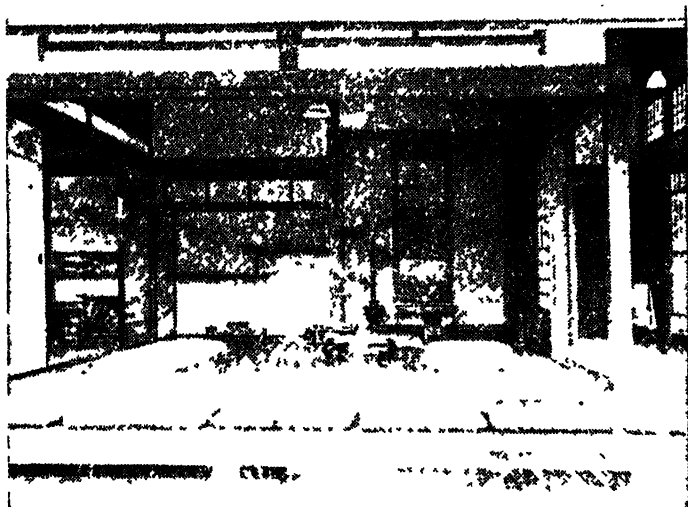
*Survival of Japanese feudal institutions*—After the middle of the nineteenth century, when the influence of W. science and technology began to infiltrate into the Iar E., J. made phenomenal progress in methods of modern industry and warfare. At the same time she attempted to carry out the so called continental policy, which contemplated the conquest of all China and, eventually of an unlimited portion of Asia. It is only against the background of J.'s social and political structure that her world outlook in the twentieth century can be understood. Centuries of geographical and mental isolation restricted that outlook and all J.

absorbed was the superficial aspects of Chinese and W. culture. Her feudal institutions survived to the period of the Second World War. Down to 1946 there was no social or political equality and the people were divided into strictly defined classes—the royal family, the aristocrats, the warriors, and the commoners. The foundation of modern or pre-1946 J. was laid during the Meiji Restoration which began in 1868. The authority of the royal family was greatly enhanced and the noble and warrior classes became the real governing classes controlling nearly all political, military, and economic power. The much extolled Meiji Restoration resulted in the oppression of the masses, whose psychology became a curious compound fashioned of modern industrialism and medieval feudalism, a complex essentially favourable to militarism from above. Military expansion followed naturally. Korea was overrun and there were easy victories over China and Russia in 1895 and 1905. After the unification of Germany under Bismarck, military training in J. was a slavish imitation of the Ger. system. The Meiji period also brought with it the rise of the *zaibatsu*, the modern Jap. financial oligarchy who, like the militarists, came from the aristocratic class and who generally co-operated with the militarists in exploiting the masses and in furthering the Jap. foreign policy of expansion. J.'s earliest modern industries were war industries. It was during the Sino Jap. wars that the notorious Mitsui and Mitsubishi combines developed their power, controlling practically all Man. huan enterprises and giving their support unconditionally to the all-dominant militarists. Political parties were organised in this period, but this too was a movement from above and not from the people. The founders of the parties, Taisuko Itagaki, Hirobumi Ito, and Taro Katsura came from the old aristocratic class. Such men had no sympathy with nor even understanding of democracy. Jap. parl. institutions were a sham and corruption and bribery at elections were rife. The financial oligarchy controlled the parliament, the military clique controlled the financiers and the people had no voice. No Jap. cabinet could be formed without the consent of the Army and the Navy. The war minister and the minister of the navy had to be, respectively, a general and an admiral on the active list, and although they were members of the cabinet they were independent of cabinet control and enjoyed direct access to the emperor.

*Japan's Manchurian adventure.*—J.'s policy towards China had openly abandoned conciliation in 1931 when the military party, swamping the Liberal gov., launched an armed adventure in Manchuria, which soon brought the entire prov. under Jap. control. J.'s intervention in Manchuria was little more than the obvious result of a fundamental conflict of economic and strategic interests with those of China. J. realised that Chinese development of railways and ports threatened her hard-won rights in

the S. Manchurian Railway. Relying on her privileged position in Manchuria, J. had invested great sums in mining and other primary resources of Manchuria—enterprises of vital importance to J.'s great home pop. Attempts to negotiate a settlement with China naturally proved abortive and the Jap. military leaders, without even consulting the Tokyo gov., hurled their forces against the whole zone of the railway. After the disarming of the garrison at Mukden and the capture of Kirin, the Jap. authorities held the hand, and the dispute was referred to the

League of Nations, her troops advanced into Jehol and soon flung the Chinese forces made suggestions for setting up a special régime in Manchuria, recognising Chinese sovereignty and, at the same time, safeguarding J.'s rights. But J. had already set up a puppet gov. and created a new State, which she called Manchukuo; and her reply to the League was that she was acting in self-defence and that, in any event, there was no central gov. in China able to carry out a settlement. J. now began to organise larger expeditionary forces and, having withdrawn from the League of Nations, her troops advanced into Jehol and soon flung the Chinese forces



INTERIOR OF A JAPANESE HOUSE

*Canadian Pacific*

League of Nations and the Chancellor of Tokyo and Washington. The League imposed a time-limit on J. to withdraw all troops within the treaty zone, which she did while insisting that the dispute could be settled only by direct Sino-Jap negotiations. An attempt by the Powers to find a way out through the Kellogg Pact (q.v.) was equally unsuccessful. The Jap. gov., adopting delaying tactics, steadily pursued their conquests, and their troops, crossing the Chinese E. Railway, took Chinchow, the headquarters of the Chinese commander-in-chief. By the end of the year (1931) they had overrun 200,000 sq. m., with no more than 20,000 troops against twentyfold that number of Chinese troops. Later, a large Jap. force was landed in Shanghai, where heavy fighting began early in 1932. Meanwhile (December 1931) the League appointed a commission of enquiry in Manchuria under Lord Lytton, whose report (Oct. 1932)

out of the whole of that prov. and S. of the Great Wall.

After the occupation of Manchukuo incidents of forward movement alternated with periods of relative calm. Every succeeding year saw a further milestone on J.'s road to empire. Thus, in 1933, it was the final looting of Jehol, with its old Chinese imperial palaces, its coal and strategic mt. passes, from the main body of China and its incorporation in Manchukuo. In 1935 came the elimination of the last vestige of the traditional Russian influence in N. Manchuria through the transfer by purchase of the Soviet share of ownership of the Chinese E. Railway to Manchukuo. The same year was also marked by manoeuvres on the part of the Jap. military authorities in China, intended to sap the authority of the Central Gov. at Nanjing over 75 million people in N. China. These 'fifth column' (q.v.) tactics culminated in the setting up, with

the connivance of the Jap. military authorities, of a puppet régime under Jung-keng in the W. dists. of N. China. Early in 1936 irregular forces, issuing from Manchukuo, drove the Chinese forces out of the prov. of Chahar, and estab. a pro-Jap. régime in that sparsely-populated ter. The Jap. foreign minister (Koki Hirota) now put forward three points as essential pre-requisites of Sino-Jap. understanding: co-operation in suppressing communism; recognition of Manchukuo by China; and the cessation by China of all unfriendly actions in relation to J. and to the policy of 'playing off a third Power against J.' The first and third were capable of the widest interpretation and could even justify J. asserting the right to supervise China's foreign relations and to send troops to any part of China where 'communist' forces might be operating.

In line with the policy of expansion on land was the denunciation by the Jap. gov. of the Washington Naval Treaty and its refusal to conclude any new naval agreement except on the basis of parity with Great Britain and the U.S.A. J. might be regarded, along with Germany and Italy at this time, as one of the three major dissatisfied or 'have-not' Powers of the world. There is abundant statistical evidence that J.'s economic position was, and is to-day, that of a proletarian nation. J. depended almost entirely on foreign sources for such vitally important raw materials as cotton, wool, rubber, and oil, which were the life-blood of many of its chief industries; and there is no mineral of any consequence which J. possessed or possesses in surplus quantities. It would be an over-simplification to suggest that the Jap. army 'staged' the seizure of Manchuria merely as a means of restoring its shaken prestige at home and driving liberalism and pacifism into the background. Other considerations were involved: the many unsettled economic disputes with the Chinese authorities; the desire to push back the reviving Russian influence in the Far E.; and the disposition of the Manchurian ruler to establish closer relations with the Nationalist régime in China. But that the Jap. army took full advantage of the strengthened position which it acquired as a result of the outbreak of hostilities in Manchuria is unmistakable. Behind the Jap. sweep towards empire at all costs were a whole complex of impelling forces. Pan-Asianism had its part. Outside J. pan-Asianism was a negligible factor until after the Second World War, when Nationalism among colonial races became active. But if the Jap. empire was to expand further, pan-Asianism, to a certain type of Jap. mind, might become a formidable slogan. J.'s sweep towards imperial expansion was by no means purely military and territorial in character. Goods with the 'made in Japan' mark won their victories and made their enemies, just as the Jap. soldiers on the battlefields of Manchuria and Jehol. J.'s advance to a commanding position on the Asiatic continent might at this time be graphically represented by three arrows, pointing in different quar-

ters: the first pointed N. to Manchukuo and the troubled frontiers with Russia; the second pointed W. to China, where the destiny of J. as an Imperial Power might well be settled either way; and the third pointed S. to the rich tropical lands of the European Powers and America, where J.'s activities had thus far been purely commercial in character.

*Japanese 'co-prosperity sphere'—The attack on Pearl Harbour.*—The collapse of Holland and France in 1940 at once led to extremist demands for Jap. intervention in the European War and for the occupation of Dutch and Fr. E. Indian possessions. To that end the very phrase 'East Asia,' coined by the Jap. with the political implications of an E. 'Monroe doctrine,' carried its obvious menace. J. now demanded that all supplies passing through Fr. Indo-China to the Chinese gov. at Chungking should cease and that all supplies going to Gen. Chiang-kai-shek through Burma and Hong Kong should also cease. At the same time Jap. troops were moved to the 25-m. frontier of Kowloon and a land blockade of the concession there was begun. These moves had their impulse in J.'s intense desire to settle what the Jap. gov. styled the 'China incident,' which every statement of Jap. policy admitted to be the gov.'s first pre-occupation. J.'s foreign minister, Arita, now outlined J.'s conception of a new order 'united under a single sphere' of Jap. hegemony which would cover 'East Asia' and the S. Seas. Thus the species of Jap. 'Monroe doctrine,' first expressed in 1934, was now widened so as to include a vast unspecified area which might embrace any land from Java to Tahiti. In fact, expansion southwards had long been the policy of an influential section of Jap. opinion, and J. had therefore steadily increased her share of the shipping in the S. Seas; while the war in China had, as we have seen, given a new significance to such expansion. The tone of the demands put forward in the middle of 1940 suggested that the collapse of France had encouraged the extremists and, through them, the Jap. gov. to new intemperance. But the Brit. fleet, strongly based on Singapore, was by no means a negligible factor, and behind the Brit. stood, if at this time somewhat equivocally, the Amer. fleet, which had not been materially weakened by the events of the preceding months. But though the Jap. gov. occupied Fr. Indo-China (q.v.) they found themselves fully occupied in China, where the Nationalist forces were slowly but certainly gaining strength and conducting, not unsuccessfully, an unremitting guerilla warfare. Yet by the end of 1941 J. had attempted no rash move, though the new gov. of Gen. Tojo entertained, in view of Russia's pre-occupation with the Ger. invasion, the most grandiose schemes—schemes which the Brit. Gov. realised might well affect India. J.'s occupation of Fr. Indo-China was in reality an attempt to outflank Brit. and Amer. defences in the Far E. as a first measure to secure dictatorial control of vast territories.



where democratic theories were taking root. The strengthening of the Allied line in the Middle E. had removed the immediate threat to India from the W., and the Jap. plan for creating a new order in Asia sought to eliminate the historically estab. rights of Great Britain, the U.S.A., and other W. Powers in that region and aimed at establishing a 'benevolent' political domination over China, the Philippines, Indo-China, Thailand, Malaya, the Netherlands E. Indies, Burma, India, and Ceylon. This project, growing out of J.'s partnership with the Axis Powers (see also BERLIN, PACT OF) was framed in such high-sounding assertions as that J. desired to see Asiatic peoples ruled by themselves; but it was also accompanied by a scheme of economic 'co-prosperity', which really meant that J. hoped to secure vast resources of raw materials in exchange for goods of her own manuf. These Jap. ambitions in Asia were, of course, closely modelled on Nazi ambitions in Europe, and were accompanied by the same cry for 'living space', the same imputation of encirclement, and the same declared intention to create a new economic system for 'liberated' peoples. Outwardly the Jap. aim was to prove that the W. Powers had no right to influence Asiatic life and culture; actually the intention was to enable J. to become overlord of the Orient under an economic polity which would have no place for the W. Powers, including even her own Axis partners. Meanwhile the Brit. authorities strengthened the defences in Malaya and the Brit. and Amer. Govs. applied economic sanctions to J. beginning in July, 1941, with the 'freezing' of Jap. assets in reply to the Jap. move against Fr. Indo-China, while the Dutch authorities made it clear that they would protect their interests in the event of further Jap. adventures.

It was evident, when Gen. Tojo, a professional soldier, replaced Prince Konoye as premier (Oct. 1941) that J. was contemplating further military activities on a scale in conformity with the principles outlined above. Tojo's gov. now began secretly to make naval and military dispositions on a most comprehensive plan, with the view of simultaneously attacking Brit. and Amer. Far E. possessions at a moment most convenient for ensuring at least initial success. Delay would mean, in fact, giving up their dreams of forcing J.'s will on the Pacific and E. Asia and furthermore, J.'s striking power was now at its peak. Besides these considerations, Hitler was forcing her hand in order to divert, if possible, the material aid which America was giving to the Russian armies with disastrous results on his Russian campaign. Tojo, therefore, sent a special envoy to Washington to join Adm. Nomura, Jap. ambassador, in order to conduct mock negotiations for a settlement of outstanding differences with the United States. In the course of these negotiations President Roosevelt sent a personal message to the emperor of J. in the vain hope of effecting an understanding; but the Jap. Gov., without any

formal declaration of war, suddenly, on Dec. 7, attacked Pearl Harbour and other Amer. bases in the Pacific and, after this outrage on conventional diplomatic procedure, announced that J. was at war with both Great Britain and the U.S., in the W. Pacific. Both these countries promptly declared war on J.

*The first two years of the war in the Pacific.*—Soon after the attack on Pearl Harbour Jap. planes bombed and sank the great Brit. warships *Prince of Wales* and *Republie*, thus gaining command of the seas in the S. Pacific. By the early days of 1942 they had swept through Thailand (Siam) to Burma and captured Penang, Hong Kong, and the greater part of the Brit. Malay peninsula and were landing fresh troops in the Philippines. Thus in the early period of the war in the Far E., Jap. arms carried all before them. Attempts by the Allies to hold fortresses and conduct campaigns without aircraft cover failed disastrously: Hong Kong, Malaya, and Singapore were inevitably lost in this way; and the Jap. conquered the Netherlands E. Indies, Borneo, the Philippines, the Andamans, and most of Burma and, by cutting the Burma Road (p. 724) they isolated China. Only as Britain and America increased their air-cover was Jap. expansion stopped eastward by the battle of the Coral Sea (May 1942) followed in the next month by the battle of Midway Is.; and westward by the defeat of air attacks on Ceylon. Throughout 1942, however, the Jap. war took second place in the eyes of Brit. and Amer. statesmen, who were bent on intensifying their effort against Germany as ordering by far the greater danger. But by pursuing an offensive in Papua the Jap. forces were now directly threatening the mainland of Australia and it was essential for the Allies to check any further advance. Hence in a strenuous campaign over jungle and mt. terrain Australian troops repelled the invaders and captured Buna and Buna, the Jap. base on the N. coast of New Guinea, exterminating their garrisons. While this war was in progress Amer. marines were landed on the large Is. of Guadalcanal (q.v.) in the Solomons and captured an aerodrome which the Jap. had recently constructed there. For long the Jap. fought hard to regain the aerodrome but by Feb. 1943 the Amers. had captured the Is. This provided the *point d'appui* for a long-drawn but effective process of 'island hopping', which gradually pierced the far-flung outer chain of strongholds covering J. from the Pacific, a process in which the over-growing air and naval superiority of the Amers. eventually asserted itself. For some time after the Jap. had been driven out of Guadalcanal no big land action was fought in the Pacific theatre, but the Amers. continued to bomb Jap. bases and, by combined sea and air operations, thwarted all Jap. efforts to reinforce their positions, especially in what is known as 'the battle of the Bismarck Sea' (March 1943) when J. lost ten warships, over one hundred aircraft, and 15,000 men. In the middle of 1943 the Amers. landed

forces on New Georgia, while the Australians made progress along the N. coast of New Guinea. Lae and Salamaua, the two chief Jap. bases on New Guinea, were taken by the Australians in Sept. 1943. Rabaul, the great Jap. base in New Britain, was overcome by the Amers. at the end of the year, who were enabled to gain control through the construction of distant airfields. The first tor. taken from J., which was not a mere recovery but had been in Jap. hands before the war, was the Marshall Is., which gave a base for bombing Truk, in the Carolines, the greatest of J.'s Pacific bases, and continuing their westward and northward advance the Amers. by the middle of 1944, reached the Marianas and captured the strongly fortified Is. of Saipan, where at last they had secured an air-base within long-distance bombing range of both the Philippines and of J. itself.

*The last two years of the war in the Pacific.*—The continual deterioration of the war situation, both for J. herself and for her ally, Germany, throughout the period of the Koiso cabinet brought that gov. down in April, 1945. Political developments within J. reflected events in the military and naval fields in 1944-45. Most serious of all, the Jap. navy was now definitely deprived of command of the sea even in those inner waters in which it was expected to have a great strategic advantage, so that J.'s shipping routes through the E. and S. China Seas, and even the coasts of J. herself, were laid open to attack. This meant the breakdown of J.'s original strategy, which relied on the bases in the Carolines, Marianas, Philippines, and Ryukyu Is. as 'unsinkable aircraft carriers' for covering J.'s maritime communications to the mainland of Asia and the Malay Archipelago and for preventing a close approach of the enemy by sea to the Jap. homeland. It meant also that J. was subjected to air attacks heavier than was expected; strong carrier-based air forces, as well as Super-Fortresses from Saipan now took part in raids, and after the Amer. capture of Iwojima in the Bonins land-based fighter aircraft were able to support the bombers and the relative invulnerability hitherto given to J. by her geographical remoteness from Allied bases was being rapidly discounted.

J.'s hope of using Burma as a spring-board for invading India had been finally destroyed by the failure of the Jap. thrust into Manipur in the spring of 1944 but Burma was still useful for defending the land approaches to Siam and Malaya and blocking the Burma Road supply route to China. Hence J. was prepared to fight stubbornly to hold it, and with the greater hope of success from the fact that the task of the Allied leader, Adm. Mountbatten, was made more difficult through the low priority for shipping and landing craft allotted to his S.E. Asia Command. During the winter of 1944-45 Adm. Mountbatten was restricted to an offensive campaign by land across densely forested mt. ranges between India and Burma, hampered by the most formidable difficulties of transport. But

these difficulties were overcome, largely by the aid of airborne supplies, and with the capture of Mandalay the Jap. hold on Upper Burma was broken. Again, the Allied success at Myittha had led to the prolongation of the road from Ledo to meet the old Burma Road, and it was possible once more to send lorries through to China.

In striking contrast to the ship-starved offensive of the S.E. Asia Command of Adm. Mountbatten, the Amer. invasion of the Philippines under Gen. MacArthur was carried out with an immense concentration of maritime transport and newly-built landing craft. Against this massive attack the Jap. had some 200,000 men in the Philippines, but they were scattered over many different Is. and the native pop. was either apathetic or hostile. Even in the inner waters of the archipelago movement by sea between the Is. was threatened by Amer. air attack. For J., therefore, everything depended on victory over the Amer. fleet without command of the sea, the dispersed Jap. land forces would be isolated in their various captured Is. It was the moment for J. to risk a naval battle and in Oct. 1944 the main strength of the Jap. navy was deployed in a determined attempt to crush the Amer. naval force which was covering the invasion of Leyte. The battle which ensued was a decisive defeat for the Jap. and it decided the fate of the Philippines. Strategically the Amer. reconquest of Manila with the naval harbour of Cavite meant that all Jap. shipping routes S. of Formosa and Hong Kong were now exposed to close naval and air attack. The vast ters. to W. and S. of the S. China Sea overrun by the Jap. since 1940 comprising Indo-China, Siam, Burma, Malaya, and the Dutch E. Indies, were now virtually cut off from J. by sea. Some slight compensation was provided for J. by the success of an offensive in S. China which opened a land corridor from the middle Yangtze to Indo-China, but this could be only of limited use for military movements. To all intents and purposes J. had now lost the resources of the S. lands and her garrisons remaining there were almost as effectively isolated as the by-passed forces still holding out in New Guinea, New Britain, Bougainville, and Truk. But the opening of through communications from Hankow S.-westward to Indo-China and southward to Canton yielded overland routes valuable for Jap. continental strategy, besides defeating and dispersing large Chinese armies in Kwangsi and Kwangtung and resulting in the capture of a number of airfields constructed at great expense by the Amers. for the use of their air forces in China. The Jap. commander-in-chief in China responsible for this successful campaign, Gen. Hata, was made a field-marshal and brought back to J. to be inspector-general of military training, and in 1945, he was appointed by the Suzuki Gov. one of the two commanders for the military defence of the Jap. homeland. The Jap. hold on China, however, despite this success of Gen. Hata, was now threatened

from a new direction—from the sea which the Jap. navy had formerly controlled, but controlled no longer. The Jap., now that Germany was beaten, had to prepare to defend Hong Kong, Canton, Amoy, and Shanghai against Allied seaborne invasion. They had also to prepare to defend Indo-China against attack from the sea now that the Amers. were estab. in the Philippines.

For the ordinary Jap., however, and indeed for his rulers, no theatre of war could compare with the homeland in importance. For the *shinkoku* or 'divine land' was now threatened with invasion from the sea. The loss of Saipan had brought down the Tojo cabinet and the tears aroused by this event were soon realised in 'Super-Fortress' raids on the industrial cities of central J., including Tokyo itself. Soon the premier, Koiso, had to admit the loss of Iwojima (March 21, 1945) and the Jap. navy, after its mauling in the Philippine waters, did not dare to go to the rescue of the garrison. Then Adm. Nimitz invaded Okinawa, an is. of the Ryukyu group commanding the sea approaches to Shanghai as well as to S.W. J. The air-raids by the great Amer. bombers reached a climax in March-June and with the promise of still worse to come. The gov. was petitioned to take more drastic action in the matter of shelters in Tokyo but was powerless to do more than advise everybody not needed in Tokyo to depart at once, huge areas of the cap. being now devastated.

The prospect in the spring of 1945 that Germany would be defeated confronted J. with a major problem which was at once political and strategic. For obviously with Germany out of the war, far greater forces would be available to concentrate on J. But whether to give up the outer zone of conquests from Burma to the Carolines and concentrate on the defence of the inner zone comprising J. itself, Korea, Manchuria and China, was a problem which brought extremists and moderates in sharp conflict with each other. Koiso told the Diet on March 23 that J. intended to take the offensive to retake Iwojima, Saipan, and Guadalcanal. Okinawa had not then fallen and it was a more serious loss even than that of the other is. Yet he was unable to explain how J. could effect such a miracle if her Navy dared not venture out of ichu waters. But the extremists, often composed of the more youthful officers, could not prevail against the general staffs and the Zaibatsu or great business houses whose minds had not, of course, been deluded by the fraudulent war-time Jap. propaganda. These knew, even before the end of 1944, that the tide of war had definitely turned against J. and that it would soon be a question of trying to get out of the war on terms falling far short of J.'s original ambitions. Thus, while as yet there was no question of unconditional surrender, it was essential to get rid of the ultra-extremists who would bar the way to any hope of peace negotiations. Therefore in April (1945) the industrial groups secured the appointment as Prime

Minister of Adm. Suzuki, former Grand Chamberlain, in place of Koiso. Yet even before this, statesmen behind the throne had been preparing the way for such an appointment and restraining the agitation of Col. Kingoro Hashimoto's fanatical followers for a 'regeneration' of the political structure. Koiso, though an extremist in foreign policy, was a conservative in domestic affairs, and therefore willing to co-operate with the elder statesmen against Hashimoto, whose group wanted to get rid of the Seijukai and substitute a large, unified, and disciplined Party State on the familiar fascist model. The Seijukai had, since 1942, been the only recognised political organisation, but it had never had any real political stamina and behind this facade the old-time politicians retained their party groupings and more or less supported the gov. of the day. But apart from these party difficulties, Koiso also found the same difficulty as his predecessor, Tojo, had in securing effective co-ordination between the gov. and the High Command. Tojo had been his own war minister and had ultimately made himself chief of the army general staff as well; Koiso deemed it imprudent to excite criticism by arrogating these posts to himself and therefore tried to co-ordinate their functions through the Cabinet secretary. But there were repeated changes in this office, one appointee after another being regarded as unsuitable—an indication more of the gravity of the administrative crisis facing the gov. than of the inherent importance of the office.

*Closing days of the war and surrender of Japan.*—The Jap. garrison of 100,000 men on Okinawa defended the is. with the utmost tenacity, as indeed had the garrison of 20,000 on Iwojima, but organised resistance on Okinawa ceased on June 21. The campaign in the Philippines ceased at the end of the month. On July 14 J. was bombarded by Amer. warships. Then, on Aug. 6, the first atomic bomb was dropped on J. at Hiroshima (q.v.); the second (and last) of the missiles on Nagasaki on the 9th. Thus did disasters accumulate and without hope of mitigation in any quarter. On the verge of surrender, J. now found herself confronted by a new and powerful enemy in Russia, which nation had not renewed the Neutrality Pact due to expire in April 1946 unless expressly renewed, and now declared war on J. to wipe out the humiliation of past defeat and to restore the status quo of nearly half a century ago. On Aug. 9 the Red Army invaded Manchuria. Meanwhile Allied aircraft, operating from speedily-organised runways on Okinawa, destroyed in one day sixty more J. ships. This was the end. Though J. still had a great fighter air force it was to a great extent a grounded force. The measure of Jap. losses was catastrophic. Thus in New Guinea, of an army of originally 120,000 men only 12,000 survived. Between the date of the attack on Pearl Harbour and Aug. 1945 some 320 Jap. warships had been sunk or put out of action, including 11 battleships,

17 heavy and 22 light cruisers, 7 aircraft carriers, 139 destroyers, and about the same number of submarines, 1 escort carrier and other craft. J's mercantile marine had practically disappeared. On land, sea, and in the air J was shattered and was now in fact faced with the prospect of speedy annihilation from further atomic bombs. Hence on Aug. 14 J accepted the Allied demand for unconditional surrender addressed from Potsdam (see POTSDAM CONFERENCE) in the names of Mr. Churchill, President Truman, and

half-century J., as has been shown, had pursued an uninterrupted policy of expansion. Her imperialistic aims had dominated the mind of the ruling class which moulded the outlook of the Japanese people in a manner to which history affords no parallel. On the basis of unquestioning loyalty to the Imperial Throne, the whole nation was taught to face any hardships which might be entailed in following the national destiny. The throne itself was exalted from a temporal to a quasi-divine institution and like the Herring



New York Times Photos

THE EMPEROR HIROHITO IN ECHELON 1916

Gen. Chiang Kai-shek. Amer. forces began landing in J. on Aug. 29 and the instrument of unconditional surrender of J. was signed on board the Amer. battleship *Missouri* in Tokyo Bay on Sept. 2. Within the ensuing days of the month the Jap forces in Luzon (Philippines) and throughout the S.W. Pacific also surrendered while the surrender in S.E. Asia was received by Adm. Mountbatten on Sept. 2. That of the Jap forces in China was signed at Nanking by Gen. Okamura on Sept. 9. For details of the war in the Far E., see PACIFIC CAMPAIGNS OF FAR EASTERN FRONT IN SECOND WORLD WAR, BURMA, SECOND WORLD WAR CAMPAIGNS IN MALAYA, BRITISH JAPANESE INVASION OF (1941-42), NAVAL OPERATIONS IN SECOND WORLD WAR. *Japan's new epoch.*—The surrender of J. marked the opening of a new epoch in the hist. of the Far E. For the preceding

or to many, the servants of the throne down to the humblest private soldier were encouraged to regard themselves as a race apart from the rest of mankind, participating in the God-like characteristics of Emperor and nation. Naturally the governing class was apprehensive lest the surrender should have a disastrous effect on public morale and they exhorted the people to look upon the calamity as a merely temporary setback due to the atomic bomb. But when they realized that popular loyalty was unimpaired they made no further attempt to minimize the implications of surrender. But, immune now from the risk of invasion, Prince Konoye (former Prime Minister of J., and after the surrender again one of the Emperor's advisers, was the first important Jap since the surrender to declare to the world that both the China 'incident' and the war with the Allies could have

been averted and that the Jap. militarists were principally guilty for both. Some of the oldtime leaders sought safety in suicide. Field-Marshal Sugiyama, chief of the Jap. General Staff up to Feb. 1944 and later minister of war in the Koko Cabinet, committed suicide on Sept. 12, and Gen. Tojo tried to kill himself when Amer. officers went to arrest him. Gen. MacArthur, supreme commander of the allied forces of occupation, at once ordered the dissolution of the notorious R. Amur Society (sometimes called Black Dragon Society) originally founded to encourage the extension of the Jap. frontier to the Amur in Manchuria, the militarist secret organisation which for forty-five years, by assassination and other methods of coercion, ruled Jap. political life) and the arrest of its leaders. Among others arrested at this time was Adm. Shigetaro Shimadzu, who, as navy minister, planned the attack on Pearl Harbour. Gen. MacArthur found comparatively little difficulty in carrying out his instructions for the disarmament of J. and for the destruction of her war potential both in the moral and material sphere. The land forces were disarmed and disbanded and all aircraft were confiscated. The United Nations (U.N.) agreed to scuttle all surviving Jap. war vessels, except about 40 destroyers and some coast defence vessels. After the dissolution of the Imperial General Headquarters and the arrest of many prominent individuals preparatory to their indictment as war criminals came the entire control by Allied authorities of the commercial and industrial life of J.; the break up of large estates among peasant proprietors; and the diversion of productive capacity into a programme to provide the people with the necessities of life. All barriers to the gathering and dissemination of news were removed, censorship by the Jap. authorities was forbidden, and the whole foundation of the elaborate system of 'thought control' so effectively conducted for many years by the governing oligarchy was destroyed. The speed of social reform and, especially, the abolition of the *kenpo* or military security police, led to the reconstruction of the Jap. cabinet and Prince Higashikuni, who had succeeded Suzuki as premier, gave place to Baron Shidehara, whose administration gave an assurance that the political power of the military clique and of the bureaucrats of the old type had been broken, and that the aim of the administration was to inaugurate a régime in which policy would be determined by the will of the electorate.

A year after the surrender the House of Representatives in Tokyo adopted by an overwhelming majority a new draft constitution for J. superseding the Meiji Constitution of 1889. This new Constitution indicated a wish to depart entirely from traditional beliefs wherever they were in conflict with the concepts of W. democracy. Based largely upon Amer. ideas, the new constitution based the foundations of the state not upon divine mandate, but upon the will of the electorate; it restricted the functions of the

Emperor, who became a symbol of the State; it renounced warfare as an instrument of public policy, and banned the maintenance of any armed forces by which war could be waged. The adoption of this constitution was, perhaps, not surprising in view of the fact that defeat had destroyed the foundations of national life and left nothing in their place. All the old beliefs and traditions had gone. In place of an outburst of dangerous subversive activity by militarist leaders, such as had been confidently expected by experts in Far E. affairs, the Jap. people, now seemed engrossed in novel political developments on democratic lines; while the trials of war criminals, so far from investing leaders of the old type with the halo of martyrdom, merely completed their discredit in popular estimation and the Diet itself pressed for a more thoroughgoing 'purge' of officials than any upon which the Allied Command insisted. The Jap. people in fact desired neither revolution nor reaction; they were concerned principally with orderly development and the elections of April 1946, so far from representing a landslide in any direction, gave a small majority in the House to a coalition of Liberals and Progressives, the heirs of the former Seijukai and Minseitō groups, whose popularity, however, was then steadily declining, while that of the Socialist Party was sharply rising. Women voted for the first time in Jap. hist. and there were thirty-eight women among the candidates elected. The voting age for men had been reduced from twenty-five to twenty. Experience throughout 1946 showed that Gen. MacArthur could rely upon Jap. co-operation in the task of restoring normal social and economic conditions. His directives were issued to a ' Liaison ' dept., which was in effect the ministry of foreign affairs. Allied Military Gov. also existed, but its prin. functions were supervisory rather than actually administrative. Perhaps the greatest contrast with the Allied occupation of Germany was that, instead of being split up into administrative zones, J. was administered as a whole by the single controlling authority, the Supreme Commander's Headquarters, working through the Jap. Gov. and, in the process, through the Allied Military Gov., which, despite its name, was in fact entirely staffed by Amers.

The new constitution came into effect on May 3, 1947. The first election for the House of Councillors, the new upper House of the Diet replacing the old House of Peers, was held on April 20, and that for the Lower House on April 25. The Socialists gained more seats than any other single party, but the Communists polled only one per cent. of the total popular vote. The House of Representatives of the Diet elected (Feb. 21, 1948) as premier, Eisaku Ishida, Democratic party leader, to replace Seton Katayama, a Socialist and a Christian, who had come into power in May, 1947 and whose Cabinet now resigned (Feb. 10, 1948). Ishida's Cabinet (March 9, 1948) was made up of eight Socialists, six Democrats and two Peoples' Co-operatives. In Feb. of the

same year the eleven-nation Far E. Commission (the U.S.S.R. abstaining) ordered the early completion of disarmament. The future of the Spratly Islands occupied by J. on March 31, 1939 will be decided by the terms of the peace-treaty with J., but under the terms of the Yalta agreement J. has lost all her other colonial possessions and mandated is. No time-limit has been set for the allied occupation of J. but according to the Potsdam proclamation withdrawal would be made when the democratic objectives had been attained. Gen. MacArthur is publicly almost deified by the Jap. and any criticism there is reserved for his system. Industrial production in J. during the six months from April-Oct. 1948 rose from 50 per cent to 61 per cent of pre-war.

Through all the vicissitudes of total defeat, total demilitarisation and total occupation the Jap. succeeded in adhering to the three things essential to the future plans with which they are credited—the emperor system, the national structure of gov. and the close knit official bureaucratic machine. Under Gen. MacArthur, a 'model' new democratic constitution became law. A democratically elected Diet, fashioned partly on the Brit. Houses of Parliament and partly on the Amer. Congress, was actively functioning. A sweeping land reform was instituted; and trade unions were legalised after years of militaristic repression. Ultra-nationalists and militarists were purged from public offices. But it was objected by some observers that J.'s democratisation existed only on paper and that while, militarily, the occupation was smoothly successful, politically it achieved very little that would endure. Economically, J. was slowly recovering but still dependent upon America's bounty. Socially, as an instrument for inspiring feudalistic Jap. to become attracted to Westerners and their ideas, the occupation might well transpire to have failed. In the material sense J. was completely disarmed, a task in which the Brit. Commonwealth troops took an important part. Without Allied permission and assistance, J. could not recreate her military machine for many years. But there was no corresponding mental disarmament or change of heart.

Despite the democratisation of Jap. political and social institutions, both Allied headquarters and the Jap. Gov. felt increasing concern over the activities of the Jap. communist party, the leaders of which held their sixth ann. congress at the end of 1947. In his New Year message to the people, the former premier, Tetsu Katayama, pledged the Social Democratic party to a 'fight against Communism' to the last ditch. His Cabinet made known its intention to combat communist influence in labour unions so far as the Constitution permits. But the strength of the communist party seemed unimpaired. The hist. of the Jap. communist party *Nippon kyosanto*, as an independent party began in 1921, when the two men who now (1949) guide it, Kyufchi Tokuda and Sanzo Nosaka, attended the Far E. Communist Conference in Irkutsk, under the presi-

dency of Stalin. But their influence remained negligible until the party was formally reorganised in Dec. 1945. After that date, although claiming officially only 17,000 members (the unofficial figure was 100,000), the party became a powerful and aggressive minority group, supported by a large body of sympathisers and wielding through tireless activity an influence out of all proportion to its numbers. Their immediate aim was to win over the labour unions. Until Gen. MacArthur prohibited the general strike planned for Feb. 1, 1947, the National Congress of Industrial Organizations, with the aid of the Jap. Federation of Labour steadily endeavoured to stage mass demonstrations, strikes, and 'production control.' This evidently indicated that the infiltration tactics of communists had met with some success. Success in the big industrial centres during the so-called 'October offensives' of 1946 and 1947 and the control acquired in certain rural areas, coupled also with the work of the Young Communist League (*Seinen kyosai renmei*), were all indicative of the party's existing and potential strength.

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**Japanese (War Criminals) Trial (1946-48).** The International Military Tribunal for the Far E., under the presidency of Sir Wm. Webb, met early in 1947 to try the Jap. war leaders. Hideki Tojo (g.v.) and his 24 co-defendants for conspiring to wage aggressive war for the purpose of securing military, naval, political, and economic domination of E. Asia and the Pacific and Indian Oceans ; for responsibility in 'conventional war crimes' (i.e., atrocities) practised by the Jap. army and navy ; for breaches of the laws and customs of war, and on many other counts. The trial lasted 417 days and adjourned on April 16, 1948, after hearing the prosecution's final reply to the summing up of the defence. Judgment being delivered on Nov. 12. There were 1191 witnesses, 72 prosecuting and 104 defending attorneys (25 Amer., 79 Jap.) and the cost of the trial reached sev. million dollars. The tribunal found all the defendants guilty and 7 of them were sentenced to death by hanging. Of the 7, all but Koki Hirota (foreign minister (1933-36), were military men. Those were Gen. Hideki Tojo, Kenji Doihara, Seishiro Itagaki, Iketaro Kimura, Iwane Matsui, and Akira Muto. All the other accused were condemned to imprisonment for life, except Mamoru Shigemitsu, foreign minister (April 1943-April 1945), who was sentenced to 7 years' imprisonment, and Shigenori Togo, foreign minister under Tojo, sentenced to 20 years' imprisonment. Marquess Koichi Kido, Lord Keeper of the Privy Seal and

one of the Jap. Emperor's closest advisers, was among those sentenced to life imprisonment. All the accused, except Matsui and Shigemitsu, were found guilty on the charge of conspiracy. Matsui was found guilty on only one count—of 'doing nothing to abate the horrors of wholesale massacres, individual murders, rape, looting, and arson' committed by Jap. soldiers under his command in Nanking in 1937. Shigemitsu was found innocent of conspiracy, but guilty of waging a war of aggression and of failing to investigate the question of the treatment of prisoners of war. Hirota was found guilty of formulating a policy of expansion in E. Asia and S. areas, promoting an aggressive policy towards the Soviet Union and supporting military operations in China. The Indian judge (Mr. Justice Pa) entered a dissenting judgment recommending a verdict of 'not guilty on all counts.' The members for France and the Netherlands also entered a dissenting judgment. The President, expressing an opinion differing in certain ways from the majority judgment, said that the crimes of the Jap. accused were far less heinous, widespread, and extensive than those of the G. accused at Nuremberg. He expatiated on the implications of the Jap. Emperor's responsibility. The authority of the Emperor (he stated) was proved beyond question when he ended the war on Aug. 14, 45. The outstanding part played by the Emperor in starting and ending the war was the subject of evidence led by the prosecution, yet the prosecution made clear that he would not be indicted. He thought that a Brit. court would, in passing sentence, not forget that 'the law in crime,' though available for trial, had been granted immunity and if, in a case, the court must by law impose punishment, the prerogative of mercy would probably be exercised to save lives of the condemned. On the charge of committing atrocities, the tribunal found that torture, murder, rape, and other cruelties 'of the most inhuman and barbarous character' were freely practised by the Jap. army and navy. Atrocities were committed in all theatres of war on a scale so vast and on so common a pattern that the only conclusion possible was that those atrocities were either fully ordered or wilfully permitted by Jap. gov. or by the leaders of the armed forces. The death rate among prisoners in Jap. hands was 27 per cent as against 4 per cent of allied prisoners taken by the Ger. and It. armies. Captured men were murdered in the hope that 'fate would discourage the allies from joining J.' At Balikpapan (Borneo), 10,000 white pop. was murdered because oil wells were not surrendered intact; some were killed by having their arms and legs chopped off by swords. Vivisection was practised on prisoners. Toward the end of the war cannibalism was practised. The evidence showed that of the massacre, were ordered commissioned officers, some of them gen. and admirals ; and early in the war had instructed commanders of prisons that they must

not be 'obsessed by mistaken ideas of humanitarianism' to all protests from the allies over the treatment of prisoners, the Jap gov returned only lying or evasive answers. When the end of the war was in sight a determined effort was made by the Jap gov to assist its criminals in avoiding punishment and orders were issued for the burning of all documents and permission given for persons who had maltreated prisoners 'to flee without trace'. The proceedings of the tribunal covering the activities of nearly a score of different cabinets reveal the unyielding determination with which the rulers of J endeavoured to safeguard that oligarchic system which they termed the national polity. It was clear to them that even if they were defeated the old J would be able to emerge again provided that the national polity was not destroyed—for them the pivot of the national polity was the maintenance of the imperial system.

The seven Jap leaders who were condemned to death at the trial were hanged on Dec 23. All but Tojo appealed against their conviction and sentence to the Supreme Court. Gen MacArthur had stayed the executions pending the appeals. The Supreme Court considered that it could not let the appeals nor interfere in the execution of the sentences, the ground of the decision being that the Tokyo Tribunal is not an American court.

**Japanning**, art of finishing in colours the surfaces of iron, wood etc the varnish being first hardened on in tins or hot chums. The process is so called from imitation of the elaborated lacquering often in which however, is far more brilliant and beautiful as well as durable. In ordinary japanning work the pigmented oil style of the work is black jay which consists of asphaltum mixed with turpentine and linseed oil. Several coats of the mixture being applied, allowed to dry separately, afterwards rubbed down with powdered pumice and then polished. After polishing a brilliant black is shown. Japanned works are usually of iron and tin has been boxes, trays, caskets, etc.

**Japan**, Sea of, bet the islands of Jap and from Korea and Siberia. It is almost tideless and lies about 600 m from E to W and 4 from N to S with an average depth 200 fathoms.

**Japheth**, one of the sons of Noah the youngest according to v 32, but the second according to iv 21. He is the father of one of the great divisions of the nations of the world (see ETHNOLOGY). Among his sons was Javan, the ancestor of Ionians. The name Japhetic has been loosely applied to peoples of European stock who are now classed as Aryan and Semitic.

**Japonica**, *Cydonia japonica*, well known shrub of the order Roso, indigenous to Japan and China. It was introduced to Britain by Lord J Petre in the eighteenth century. It is single and double white, red, orange flowers. Crowned as an ornamental plant.

**Jaque-Dalcroze**, Emile (1865), Austrian composer, b in Vienna. Studied under Kuchs and Bruckner in Vienna, and under Debussy in Paris. Prof of music, Geneva Conservatoire, 1892, where he evolved his educational method, the *Gymnastique rythmique*, a system of musical and gymnastic training which has won world wide fame. Institutions for teaching his system have been opened at Hildesheim, near Dresden, in Geneva (his headquarters), Paris, and London. He has written many delightful and original songs and compositions full of melody. His operas include *Sancho*, *L'œuvre de Bergame*, *Bonhomme Judis* and *Janus*; his songs are collected in *Chansons populaires* and in *Chansons et Jingles pour enfants*. He has written *Simphonies* (1912) and *La Musique et nous* (1915).

**Jargoon**, name applied to certain varieties of zircon which can be cut as gems, but are not of the reddish colour of the gemstone. Some are colourless and others are tinged with green yellow or red the lustre being very much that of a diamond.

**Jarnac**, tn in W France dept Charente on the left bank of the Charente 7 m S.E. of Cognac. Brandy wine and wine cellars manufactured. Louis Prince de Condé was killed here in the victory of the duke of Anjou over the Huguenots (March 13 1569). Pop 1000.

**Jarnach**, Philip (1852), composer of Spanish parentage b at Noy-sous-France. Studied at the Conservatoire. Educated at Noy and in music under Rasker for piano and under Lavignac for musicology but finally self taught. Taught at the Zurich Conservatoire 1918-21 and later, in Berlin. Disciple of Busoni and composer rather than national. Has composed birds and songs for piano and violin including *Winter Idylls*. *Le Jucy to a Townsman* and *Prelude for theuthus*.

**Järnefelt**, Armas (b 1863) a Finnish composer born at Viipuri (Viborg) studied under Busoni and Massenet in Berlin and Paris respectively. Became conductor of the opera and head of the conservatoire at Viipuri and then at Helsinki, becoming court conductor in Stockholm. His written orchestral and choral music.

**Jaro**, a tn of the prov of Hlolo. Philipine Is 4 m N.W. of the cap. Hlolo. It has a large trade in sugar and agricultural produce. Until 1908 it was part of the tn of Hlolo. Pop 11,000.

**Jaromer**, or Jaromierz, tn in Bohemia, Czechoslovakia on the R Elbe 68 m N.E. of Prague. There are remains of Roman and Jute. Pop 3,000.

**Jarosław**, see JAROSLAV.

**Jarosław**, tn in Galicia Poland, on the R San 60 m N.E. of Lvov and about 20 m N. of Przemyśl with which it is connected by rail. It has manufactures of confectionery, cloth, pottery and brandy. Pop 21,000.

**Jarrah**, or *Eucalyptus marginata*, also known as the mahogany gumtree. It is a species of Myrtaceae indigenous to S.W. Australia, and is much valued on account



of its wood, which is used in building and furniture making.

**Jarrow**, industrial tn and municipal bor in the co of Durham, England, situated on the Tyne about 6 m N of New castle and 1 m S of S Shields. St Paul's church, once the church of the monastery associated with Bede, contains part of the original building, and nearby are some monastic ruins. The tn is essentially part of industrial Tyneside and the present industries include sectional steel rolling, steel casting, special refined iron manuf., ship repairing, oil installation, slag crushing and preparation for road work, patent wagon axlebox manuf., light electrical accessory manuf., bakers' oven and ancillary equipment production, metal box manuf. and general engineering products.

Although it probably had a Roman occupation, J derives its name from the Saxon word *garra* or *gar* meaning a marsh or fen, the marsh being J slake (corruption for J Lake), an estuary of the Tyne on the E side of the tn. J, however, is much better known as the home of the Venerable Bede who entered the monastery founded by St Benedict Bishop (q.v.) at J. In consecration of the Abbey in AD 680 and remained there until his death in 735. The *Codex Bezae Cantabrigiae*, one of the finest mss of the Scriptures, was written by Bede at J. Bede earned also in the arts and sciences. Bede also taught the art of glass making and iron founding. Although despoiled by the Danes and others, parts of the monastery still stand in ruins adjacent to St Paul's church. Little is known of J from the time of Bede until the nineteenth century. In 1803 a colliery was started by Simon Temple, but it closed down (c. 1815) after three explosions. Contemporaneously the winning of salt by evaporation of huge pans of sea water was a flourishing industry in J. Coal from J was now brought to bunk at Boldon colliery. The ships and for which J was again to become famous, was started by Charles Wark Palmer (afterwards Sir C. M. Palmer and first Mayor of the bor.) and his brother George in 1822. In this shipyard the first practicable iron screw collier was launched (1842) and numerous warships of all classes were constructed, the first being H.M.S. *Terror* (1811 tons), the first ironclad with rolled plates, in 1856, and the largest H.M.S. *Queen Mary* (27,000 tons), which was lost in the battle of Jutland in 1916. The Palmer Works grew from the shipyard commenced in 1852 to a shipbuilding and iron works covering 140 ac. and employing up to 10,000 people. No fewer than 900 ships of a total displacement of 2,000,000 tons were launched from J. until 1933 when the works were closed. In 1934 the yard was sold subject to a restrictive covenant against shipbuilding therein for a period of 40 years, the object being to eliminate wasteful competition, but during the Second World War this covenant was waived in the national interest and ship repairing again commenced in the yard. The decade 1930 to 1940 was one of great

unemployment in J with three quarters of the working pop. unemployed, and strenuous efforts were made to bring back industry to the tn. Eventually J. was included first in the Special Area of Durham and Tyneside, and the site of the Palmer Works was purchased by the Special Area Commissioner and new industries began to be set up on the site, particularly through the efforts of Sir John Jarvis M.P., who turned his attention to the development of furniture-making, ship-breaking, manuf. of hot and cold rolled solid drawn tubing, the production of steel and alloy castings, and general engineering. In 1946 the Tyne Tunnel Bill was passed to authorise the construction of a tunnel of tunnels under the Tyne between J and Wallsend. Three tunnels are to be constructed—a 1230 ft long pedestrian tunnel with a twin tunnel alongside for vehicles, and a vehicular tunnel quite separate from the other two. Excavation began in 1947 and the N (Howdon) and S (Jarrow) workings were joined in 1949. In the 1911-18 War the Palmer Works were bombed in 24 different raids with some loss of life. In the Second World War the bor was bombed on sev. occasions with a death roll of 8,200 houses being destroyed. A development plan for the older part of the tn was adopted by the council in 1944. Pop. 26,500.

**Jasher** (i.e. Jashar), **Book of, or Book of the Upright**, one of the most important of the lost works of the Jews. It is twice quoted in the canonical books of the O.T., and it is noteworthy that each quotation is poetical in form. In Joshua 13, the passage telling how Joshua commanded him to sit and still over Gibeon and the moon over Ajalon is quoted from the B of J. So also is David's lament over Saul and Jonathan in 2 Sam. 18. From these it is deduced that the book in question was a collection of songs, more secular than religious, dealing with the exploits of Israelish heroes. Various Talmudic authorities have attempted to identify it with one or other of the early canonical books, but with no effect. It is a separate production of the post-Solomonic period, probably containing, however, many poems of earlier date which also occur in Exodus, Judges, Samuel, etc. During the later Middle Ages three Jewish works appeared claiming to be the lost B of J, and in 1751 there appeared an astounding forgery purporting to be a translation into Eng. by Akiba.

**Jashpur**, trib. state of the Central Prov. India. In the bed of the R. Bh. the most important riv. of the state, are found diamonds and gold. The state also produces iron, silk, lac and beeswax. The area is 1965 sq m. Pop. 132,000.

**Jasione**, genus of plants of the order Campanulaceae. Two species are found in Europe and in Mediterranean dists., one of them *J. montana*—Sheep's bit or scabious—being native to Britain. It grows in hedges and has blue flowers of fine shades.

**Jasmin**, **Jacques** (1798-1864), known as the 'Barber Poet of Agen', a Provençal whose real name was Jacques Boé. His

first vol. of poems, called *Papillotes* (Curl Papers), was pub. in 1825, containing some verse in Fr., but mostly in the Provençal 'patois.' These 'patois' poems are generally in the form of short epic narratives, both grave and gay, dealing with familiar scenes of the peasant-life in which he took part, and marked by spontaneity and simple grace of diction. J. is now generally considered the direct forerunner of Mistral, and the *Péti-brige*. Four successive vols. of the *Papillotes* were pub. during his life-time and contained the famous poems 'Charivari'; 'My Recollections'; 'Martha the Simple'; 'The Twin Brothers'; 'The Blind Girl of Castel-Cuillé' (trans. into Eng. by Longfellow, and set to music by Coleridge-Taylor, 1901); and 'Francoisette' (trans. into Eng. by J. D. Craig in his *Poets and Poetry of the South of France*, 1866). See L. Rabau, *Jasmin, sa Vie et ses Œuvres*, 1867; F. De Montroud, *Jasmin Poète* (2nd ed.), 1876; J. Andrien, *Jasmin et son Œuvre*, 1881; C. A. Sainte-Beuve, *Portraits contemporains*, 1870; J. Smiles, *Jasmin, Barber, Poet, Philanthropist*, 1891; X. Cardaillac, *Propos Gascons: Jasmin*, 1898; and P. Marieton, *Jacques Jasmin*, 1898.

Jasmine, or Jessamine, term applied to the various species of *Jasminum*, a genus of Oleaceae. There are between one and two hundred of these shrubs, most of which bear sweet-scented flowers followed by a fruit which is vertically divided in two. *J. officinale*, the common J., grows in Europe and Asia. Besides the true J. there are many very different plants to which the name is given. Thus *Gardenia florida*, a species of Rubiaceae, is known as Cape J.; *Gelsemium sempervirens*, a species of Loganiaceae, is the Carolina J.; *Plumeria rubra*, a species of Apocynaceae, is the jasmine-tree; *Calotropis procera*, an asclepiadaceous plant, is the Fr. J.

Jason: In Gk. mythology, the leader of the Argonauts, was a son of Æson, king of Iolcus. His half-brother, Pelias, drove him from the kingdom, and he was educated by the Centaur Chiron. Pelias was warned by oracle against the man with one sandal. When J. came to claim his kingdom, he entered the mkt.-place with one sandal, and Pelias, recognising the omen, sent him in search of the golden fleece. J., by the help of Medea, secured the fleece and returned with her in the *Argo*. Medea, pretending to restore youth to Pelias, persuaded his daughters to dismember him and place the member in a cauldron. J. and Medea were expelled. Finally J. forsook Medea for Glauce, and Medea in revenge slew the new bride and her own children by J. For a graceful popular account, see Charles Kingsley's *Heroes* ('The Argonauts').

Jason, name of Gk. origin in common use among the Jews. J. was a favourite equivalent of Heb. Joshua. There are sev. J.'s mentioned in the Apocrypha, and one in the N.T.: (1) Of Cyrene, a Hellenistic Jew who probably lived in the second half of the second century B.C., and was the author of a hist. of the times of the Maccabees down to the victory over Nicanor

(175-161). (2) The second son of Simon II. By means of a bribe to Antiochus Epiphanes he managed to usurp the high priesthood of his brother, Onias III. (Antioch II.). Another bribe enabled him to set up a gymnasium in Jerusalem to enrol the inhabs. of Jerusalem as 'citizens of Antioch.' He subsequently died in exile (see 2 Macc. iv., v.). (3) The son of Kleazar, sent by Judas to Rome (1 Macc. viii. 17). He is probably the J. who is mentioned as the father of Antipater (1 Macc. xii. 16). (4) Of Thessalonica, was the host of St. Paul in that city and his surety with the magistrates (Acts xvii. 1), and, according to tradition, bishop of Tarsus. He may be identical with the J. of Roms. xvi. 21, Paul's 'kinsman.'

Jaspar, Henri (1870-1939), Belgian statesman and premier from 1926-31. A member of the Catholic Party he was intimately associated with the post-war reconstruction of Belgium as minister of economic affairs. Subsequently became foreign minister and then Premier. In 1929 he became permanent president of the Reparations Commission.

Jasper, crypto-crystalline form of silica, usually opaque, though contained argillaceous matter. It is related to flint, chert, and chalcedony, and is found in veins and cavities in igneous rocks from which it is derived by decomposition. Through the admixture of oxides and silicates of iron its colours vary from red, brown, yellow, to green. The Jasper of antiquity was apparently a brilliant green translucent form, and the name was evidently applied to forms of chalcedony. The ribbon J. of Siberia has well-marked red and green stripes. Egyptian J. usually occurs in brown nodules in the Nile valley and Libyan desert. A rather rare form of the mineral is termed porcelain J., and it is distinguished by minute holes and a multiplicity of cracks; it has evidently been so altered by being baked *in situ*.

Jasper Park, largest national park in the world, situated in N. Alberta, Canada, has an area of 4,521 sq. m. It was estab. in 1907. It is connected by road with Banff national park over the Columbia Icefield Highway and glaciers come right down alongside. The park is reached from Edmonton by train on the main line of the Canadian National Railways. A curious point in relation to the hist. of the park is that it was named after a yellow-headed if otherwise obscure young fur-trader from Missouri.

Jaspers, Karl (b. 1863), Ger. philosopher and psychiatrist, b. at Oldenburg, son of Karl J. a bank director. He was educated at the Humanistisches Gymnasium, Oldenburg. He became a *Privatdozent* at Heidelberg in 1913 and prof. there in 1916. He has been Prof. of philosophy Basel Univ. since 1948. During the Second World War J. never made the slightest concession to the Nazis and courageously upheld the great traditions of W. civilisation, symbolised for him by such names as Goethe, Jacob Burckhardt, Kierkegaard and Nietzsche. The address which J. delivered on the occasion of his

being awarded the Goethe Prize of the city of Frankfurt (Aug. 1947) indicates his unequivocal search for truth and his profound understanding of the spiritual and moral needs of our age. This is exemplified in his book *Von der Wahrheit*. As an existentialist philosopher he shows much more balanced and responsible thought than Heidegger and sev. other existentialist philosophers. His pub. works include *Psychopathologie* (1913, 1916), *Psychologie der Weltanschauung* (1919, 1926), *Philosophie* (1932), and *Von der Wahrheit*, 1948. See E. L. Allen, *The*

Group under Gen. Malinovsky attacked the strong positions covering J. These positions were based on two riv. lines defended by a network of intricate strong points, with a reserve line in the wooded heights behind J. But the impetus of the Russian attack carried all before it, and though there was street fighting after the Russians entered the tn. it fell to them on Aug. 22 after a three day battle which broke the Axis line to a width of 75 m. and a depth of nearly 40 m. between the Serezh and Pruthi. Pop. 109,000. Jastrowie, (Ger. Jastrow), tn. in Poland,



Canadian Government

## MALIGNE LAKE, JASPER NATIONAL PARK

*Self and its Hazards. An Introduction to the Thought of Karl Jaspers*, 1949.

Jassy (Jasi, Yassy), chief tn. of Prut, Rumania, 5 m. W. of the R. Pruth and the Russian frontier. It was nearly destroyed by fire in 1822, but was rebuilt on a modern plan. It is the seat of the Gk. Orthodox metropolitan of Moldavia and of a Rom. Catholic archbishop, and has a univ. (founded 1864). J. has a trade in petroleum, salt, metals, timber, cereals, fruit, wine, and cattle. Here was concluded the peace between Turkey and Russia in 1792. From 1564 to 1879 J. was the cap. of Moldavia. In the First World War, when much of Rumania fell to the Central Powers, the Rumanian Court remained at J. throughout the period of these reverses. In the Second World War, in the course of the Russian offensive against Ger and Rumanian forces launched on Aug. 20, 1944, the second Ukrainian

52 m. W N.W. of Bromberg (Bridgo+cz). The chief industries are spinning and weaving. Pop. 5900.

Jaszapati, tn. of the co. Jasz, Hungary, 52 m. E. of Budapest. The chief industries are agriculture and horse-breeding. Pop. 11,000.

Jaszbereny, tn. of the co. Jasz, Hungary, 10 m. E. of Budapest. It has manuf. of wine and cloth. Pop. 26,500.

Jasz-Nagykun-Szolnok, co. in Hungary, watered by the Tisza (Theiss). The chief tn. is Szolnok. Area 2074 sq. m. Pop. (co) 251,000.

Játaka, name used to designate the legends which recount the 550 incarnations of Buddha. These fables are widely disseminated throughout India, and occur in various disguises in the folklores of nearly all European countries. See V. Fausboll (ed.) and T. Rhys Davids (trans.) *The Jataka, with its Commentary*,

1877-91; and *Buddhist Birth Stories*, 1880; E. B. Cowell, *The Jataka*, 1895; J. J. Meyer, *Twice Told Tales*, 1903.

**Jath**, India, native state in the Deccan div. of Bombay. With the small state of Daphlapur, it forms the Bijapur agency, covering an area of 980 sq. m. The prin. industries are agriculture and cattle-rearing. Pop. 75,000. The tn. of Jath has a pop. of 8000.

**Jativa** (nuct. *Sesetabis*), city, prov. of Valencia, Spain. In Rom. times it was famous for its linen. It is picturesquely situated on the R. Albaida. Its chief products are fruit, rice, oil, and wine. Pop. 12,767.

**Jatropha**, genus of Euphorbiaceae, occurs in tropical and sub-tropical countries, but is found most frequently in America. There are seventy species in all, sev. of which yield a valuable oil. *J. podagrica* is a curious species with a thick swollen stem, and is often cultivated in greenhouses.

**Jats**, people of N.W. India, and Pakistan. They form a considerable portion of the pop. of E. Punjab, Rajputana, and the adjacent dists. of the United Provs. Two states of Rajputana—Bharatpur and Dholpur—are under Jat rulers. Hindu legends seem to point to a pre-historic occupation of the Indus valley by this people. The J. are mainly agriculturists and cattle breeders. They are very dark in colour, and have regular features. In religion they mostly follow the Sikh or Mohammedan faith.

**Jawer** (Polish *Jawor*), tn. of S.W. Poland 35 m. W. of Wrocław. Before the Second World War it produced saw-ages and grain and manufactured machinery, carpets, leather, etc. There are interesting old churches and a palace of the former princes of J. Pop. 12,700.

**Jauja**, or *Atanajaja*, tn. on the riv. of the same name, in the dept. of Juam, Peru, 115 m. N.E. of Lima. Silver mines occur in the prov. Pop. 3100.

**Jaumave**, tn. and com. in the prov. of Tlaxcala, Mexico, about 30 m. S.W. of Ciudad Victoria. Large quantities of textile fibre are grown in the J. valley. Pop. 10,000.

**Jaundice**, symptom of disorders of the system, rather than a disease, and is caused by the presence of the colouring matter of bile in the blood. It causes the skin and the conjunctiva of the eye to become yellow hence its name, from Fr. *jaune*, yellow. The urine becomes very dark, varying from saffron to porter in colour, and the faeces become of a drab or slate-grey hue. Sometimes in addition to this there is extreme itching of the skin. J. may be caused in two ways, (1) the most common being when the bile duct is obstructed, and (2) when there is no obstruction. The first is known as hepatogenous, and the second as hematogenous J. In the first the biliary mechanism, and in the second the blood, is at fault. The first may be caused by the presence of gall-stones in the bile duct (see CALCULUS), by catarrh and swelling of the lining membrane or of the duodenum or by the pressure of growths of neigh-

bouring parts of the pregnant uterus, or of accumulations of feces in the bowels. This causes the bile to be retained and absorbed in the blood, and so the coloration arises. The second class of J. may be caused by severe mental emotions, like anger and fright, by certain snake and other poison, and by certain diseases like pyæmia, typhus fever, and in particular by yellow fever. The cause of yellow fever is a virus whose presence allows the bile pigments to continue to circulate in the blood. In cases of obstruction by gall-stones, catarrhal J., and by pressure of the pregnant uterus or of feces in the bowel, or congestion of the liver, recovery is comparatively certain. It is more serious when resulting from cirrhosis of the liver and tumour of the liver; and when it results from acute diseases or from poisoning, it is a very serious symptom.

*Weil's disease*.—J. is a common sign of this spirochetal infection. The spirochaetes are excreted in the urine of rats and penetrate the skin of workers in sewers and people in similar occupations.

*Malignant jaundice*.—A rare form of non-obstructive J. which accompanies yellow atrophy of the liver, in which the liver shrinks greatly and the liver cells disintegrate rapidly, resulting in a very speedy death.

**Jaunpur**, cap. of a dist. in the United Prov., India, and is situated on the R. Guntl. It was originally the cap. of a Muslim kingdom, and contains certain mosques, the remains of the fort, and other similar structures. The riv. here is crossed by a bridge built in the sixteenth century. Pop. 330,000.

**Jauréguerry, Jean Bernard** (1815-87), Fr. admiral who served with distinction in the Franco-Ger. War. He was b. at Bayonne, entered the navy (1831), and subsequently served in the Crimea and in China. He was minister of marine from 1879-80, and from 1882-83.

**Jaurégu y Aguilar, Juan de, Chevalier de Calatrava** (c. 1570 c. 1649), Sp. poet and painter. He visited Rome (1607), and produced a verse trans. of Tasso's *Aminta*. His *Rimas* appeared 1614, the *Discurso poetico* (1623), assailing the Gongoristic movement, yet Gongora's style influenced his *Orfeo* (1621), and especially his trans. of Lucan's epic, *Pharsalia* (1645). See H. Ticknor, *History of Spanish Literature* (1849); F. Quillet, *Des poètes espagnols*, 1816; L. de Sedano, *Parnaso español*, I., 1768-73; M. Rivadeneyra (pub.) *Biblioteca de autores españoles*, xlii. 1849.

**Jaurès, Jean Léon** (1859-1914), Fr. socialist statesman and man of letters, b. at Castres in the dept. of Tarn. In 1883 he was appointed to the chair of philosophy at the univ. of Toulouse; but he resigned his professorship on his election in 1885 to the Chamber of Deputies. He embraced the cause of the employees in the Carmaux strike. He became the recognised Socialist leader in the Chamber in 1893, and was one of the chief champions of Dreyfus. In 1902 J. became vice-president of the Chamber. His chief

work in the *Histoire Socialiste 1799-1900*, pub in 1901. He was in England the best known of the socialists. On July 16, 1914, he proposed the resolution carried at a socialist conference in Paris, in favour of a general strike to prevent war. He was assassinated in the Rue du Croissant by shooting July 31, on account of his efforts for peace. See C. Rappoport, *Jean Jaurès*, *L'Homme le Penseur le Socialiste* 1915. L. Lévy Bruhl *Quelques Pages sur Jean Jaurès* 1921 and *Jaurès* by G. Lévy 1915, L. Soulé 1921. L. Lévy Bruhl 1924 and J. Jackson 1943.

**Java** one of the larger is of the Dutch E. Indies in that portion of the Malay Archipelago known as the Sunda Is. Its extreme length is about 600 m. breadth 120 m. and it covers an area (with Madura a small is. off the N.E. coast) of 51,030 sq. m. It is washed on the N. by the Sea of J. on the E. by the Strait of Bali on the S. by the Indian Ocean and on the W. by Sunda Strait. The coast line is little developed and from end to end of the I. there is a mt. chain called Gunung Kendang. Alluvial plains extend along the N. coast and towards the S. Java falls steeply towards the sea. Many of the volcanoes in the mts. are still active and the highly volcanic character of the country helps to explain the great fertility of the soil. In 1913 there was a severe eruption of the Merapi volcano, some 700 persons being killed. Numerous rivers flow from the N. and S. sides affording supplies to artificial water courses and carrying fertility with them, only two, however, are navigable for large boats. The climate is rather hot and unhealthy on the coast but salubrious and pleasant in the hills; the more elevated regions being remarkably healthy. The days are, as a rule, hot, but moderated by land and sea breezes. The rainy season lasts from Nov. to March. The range of J.'s vegetation follows that of its temp. and is one of astonishing fertility. The coast is fringed with coconut trees and the ground behind them to the foot of the mt. chain is well cultivated. There are large rice fields and sugar plantations and cotton, cinnamon and tobacco are freely grown and many parts of the coast are fringed with mangrove. Further inland are found palms, tree ferns and screw pines. In the forest region the trees are richly clad with ferns and enormous fungi, and consist mainly of teak. The most noted Javanese plant is the heftik or upas, the famed poison tree. Many of the loftiest trees are crowned with blossoms, and shrubs and herbaceous plants give brilliant effects at the edge of the forest and the sides of the highways. Rhododendrons, magnolias, myrtles, orchids, pitcher plants etc. abound and it is estimated that the total number of species of Javanese plants is over 5000. J. is not so rich in fauna—lions, rhinoceros deer and wild swine are the chief of the quadrupeds. Few species of crocodiles and serpents are found, and of birds there are only a few conspicuous for their plumage and none distinguished by their song. Insects cover the ground and plants in

countless numbers. The pop. of J. is almost entirely agric. and is distributed over the is. in villages each governed by a native chief of its own choosing. Scattered all over the is. are many agric. estates chiefly owned by European and Chinese agric. companies, but the greater part of the soil of J. belongs to and is cultivated by the natives. Rice forms the staple food of the natives and is raised in large quantities; coffee and sugar also form staples of the is. Other native cultivated crops are maize, cassava, sweet potatoes, groundnuts and soyab. beans, and cotton in large quantities; pepper, tobacco, tea, coconuts and cinnamon are likewise cultivated with varying success. The natives consist of the Javaneses proper, the



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## JAVA A PADDY FIELD

Indonesians and the Madurese and the pop. is 43,000,000, of whom less than 14,000 are Europeans. It is one of the most densely populated countries in the world. The Javaneses are small in size, of a yellowish hue, with brown or black eyes and long, dark, coarse hair. Their lips are thick and teeth naturally white. They are a sober, patient race and easily led in most matters. J. is ruled by a governor general or vice roy, who has command both of army and navy in all the Dutch provinces of the Indian Archipelago. Batavia is the seat of govt. where there is a high court of appeal. The governor general is assisted by an advisory council of four to six members, of an advisory character. The members of the Council, however, have no share in the executive. The governor general and the members of the Council are nominated by the Sovereign of the Netherlands. In 1918 a Volksraad

was installed to discuss the budget and advise the gov. of which in 1923 the Dutch E. Indies were granted a measure. The 'Volksraad' and the governor-general share the legislative powers between them. In 1940, when Holland was overrun by the Germans, the Dutch E. Indies became the seat of the Dutch Govt. in conjunction with representatives in London, and it was for J. and the other colonial possessions that the Dutch carried on the war against Japan for a short time; but eventually the Jap. gained complete control of all the Dutch E. Indies. The natives are under native tribunals, superintended by Europeans in certain instances, and schools for primary instruction have been estab. at Batavia and other prin. tns. There are also public secondary schools in connection with the primary schools, and High Schools for Technology, Law, and Medicine.

Mohammedanism is now the prevailing religion in J.; but before its introduction at the end of the fourteenth century Brahmanism and Buddhism had prevailed. Among the Buddhistic ruins is the famous temple ruin of Borobudur built about A.D. 750. The art of J. was chiefly developed under Hindu influence and the early drama strongly suggests Indian origin. J. exports chiefly sugar, coffee, tea, rubber, quinine, and tapioca, mattan and petroleum products. Rice is grown extensively but does not suffice for local consumption. In 1937, the total exports from J. and Madura were valued at over 1,000,000,000 guilders. Imports were valued at half that figure. There was before the Second World War, a weekly mail service by luxurious Dutch boats to and from Holland; and regular steamship connection with Singapore and other neighbouring ports, as well as with Australia, China, Japan, and Brit. India. The railway system of J. is highly developed and covers practically the whole of the is. There were regular air services between Batavia, Sumarang, and Surabaya, and also between Batavia and Medan.

*History during and after the Second World War.*—Following the Jap. naval victory of Feb. 27, 1942, in the battle of the J. Sea, J. was occupied by the Japs. Palembang was raided by allied aircraft at times but otherwise J. was not the scene of any fighting in the war. After the Jap. surrender in Aug. 1945 the Dutch, having no ships or troops to spare were unable to resume possession of the is. and the internal situation was complicated by a widespread Indonesian revolt against the small allied forces which tried to enter on behalf of the Dutch. Before the war there was a Nationalist movement in the E. Indies as in other regions of Asia ruled by the W. Powers. During the war the Indonesian Nationalist leaders took office under the Japs. in various Jap. sponsored organisations. Late in 1944 Japan made a formal promise of independence to the Indonesian nationalist leader, Dr. Soekarno and, after the Jap. surrender, Dr. Soekarno publicly announced that Indonesia was a sovereign independent

republic. When the Japs. saw that they were to lose the war they gave every encouragement to the independent movement in order to complicate the position for the allies, and to that end they gave much of their military equipment to the Indonesians. The latter, seeing the difficulties of the allies, made the most of their opportunities and by the time the first allied troops were ashore, they had gathered nearly all the reins of power into their hands, besides drawing up a republican constitution with Soekarno as President. In the meantime the Dutch were dependent on the Brit. The original purpose of the despatch of Brit. forces to J. was to arrange on behalf of the United Nations for the disarming of the large Jap. garrison and for the safety of the Dutch and Eurasian prisoners of war and internees. But these tasks were greatly complicated by the action of the Japs. in handing over stores of arms to the Indonesian 'youth' movements and encouraging Indonesian nationalists to occupy the administrative posts which they themselves had to relinquish on their surrender. Thus inevitably the Brit. forces became involved in local politics, with the unenviable task of trying to reconcile two incompatible responsibilities—respect for the position of their Dutch allies and respect for a nationalist movement of the very type for which Britain was making provision by the announcement of a new policy in India, Burma and Malaya. Queen Wilhelmina's policy, outlined in Dec. 1942, provided for an imperial conference after the war, to settle the future relationship between the component parts of the Dutch empire; but the Netherlands gov. failed to appreciate the hold which the Nationalist movement had gained in J. and the initial negotiations were prejudiced by the reluctance of the Hague to deal with men rather hastily discounted as 'quintings.' By the time a new Indonesian cabinet had been formed from men who had a good record of resistance to the Japs. and the Dutch proposals were advanced in a more conciliatory spirit, the temper of the Nationalist leaders had hardened and, by the late autumn of 1945, there was but little hope of inducing the main parties to come to the conference table.

Fighting in Surabaya between Brit. troops—chiefly Mahratta and Rajputana infantry—commanded by Brig. A. W. F. Mallaby, and the Indonesian extremists broke out at the end of October, following the announcement by allied leaflets that a military gov. was to be instituted. This outbreak postponed indefinitely the political talks which had been arranged to take place in Batavia between Dr. van Mook and the Nationalist leaders. Towards the end of Nov. there were two divs. of Brit. troops in J. and their difficulties arose less from the resistance of the extremists, which was both unskillful and fanatic, than from a desire to spare Indonesian lives and to avoid the development of a racial war. Brig. Mallaby the Brit. commander in Surabaya was murdered on Oct. 30 when discussing

with local Indonesian leaders the details of a cease-fire agreement. Gen. Sir Phillip Christison, the allied commander in the Netherlands E. Indies, then broadcast a warning that unless the Indonesians who had broken the truce surrendered he would bring the whole weight of his forces against them. Brit. destroyers arrived at Surabaya, in and around which in there were some 15,000 armed Indonesians, in order to evacuate Dutch women and children. Soekarno expressed regret at the murder of Brig. Mallaby but the murder by extremists over whom he had shown he had but slight control was the worst set-back yet suffered by the independence movement. Troops of the 5th Indian Div. then arrived in force in J. from Singapore and some battalions, with armoured units, were posted to Surabaya.

The political situation was further complicated at this time by the announcement from the Hague that Dr. van Mook, the Dutch political and administrative head in J., was negotiating with Soekarno against the instructions of the Netherlands Gov. But on Nov. 6 van Mook announced the main points of a declaration of policy, making provision for an Indonesian Commonwealth. But with war in progress and the Dutch thinking in terms of war, such a declaration which might have been effective earlier, now signified next to nothing and indeed Soekarno, who now feared trouble if the Dutch regained control, rejected the local gov.'s terms. Many Indonesians were killed in tactical charges against Brit. tanks in Surabaya manned by Mahatta troops. Indonesian-manned Jap. tanks fired at the 5th Indian divisional headquarters but were soon silenced. Various Indonesian headquarters were bombed and demolished. There was now evidently disunity among the Indonesians; for a new group of Nationalist leaders, headed by Sjahrir and Amu Sjarifudin announced that they would meet Brit. but not Dutch representatives. But fighting continued in Surabaya, Semarang, and other places. Rocket-firing aircraft of the R.A.F. put out of action the wireless stations at Surakarta and Jogyakarta, which had been used for violent propaganda against the Dutch, the Brit., and the more moderate Indonesians. Indonesian terrorists attacked a camp for interned persons at Ambarawa killing women and children. There was fierce fighting (Nov. 26) near Ambarawa between Gurkhas and Indonesians. Meanwhile the national convention of the republican movement continued its leisurely and academic deliberations and soon the main centre of troubles shifted to Bandung. Rocket-firing Mosquitos and dive-bombing Thunderbolts were used against the Indonesians in S. Bandung. In April of the next year Lord Inverchapel arrived as mediator and, as a result Indonesian envoys and Dr. van Mook the governor-general, went to the Hague for negotiations. It was agreed that an Indonesian republic should be formed as part of the Commonwealth of the Dutch E. Indies within the circle of the whole Dutch

realm. This was based on the charter proclaimed by Queen Wilhelmina in Dec. 1942 to give equal status and equal rights of citizenship to all parts of the Dutch realm. The Dutch would not, however, agree that the projected republic should extend beyond J. to include Sumatra, the Celebes, Moluccas, and other is., until the wishes of the natives were known. Dr. Sjahrir then went off to lay the Hague agreement before Soekarno, and returned, after a long time, with counter proposals which rejected everything agreed at The Hague and demanded the formation of an entirely independent Indonesian Republic, to include all the Dutch E. Indies, thus repudiating all thought of a federative scheme. In view of Soekarno's bad record in the war, it was not surprising that negotiation was difficult if not impossible. Soekarno had hastened to collaborate with the Japs. . he was president of their puppet gov. in J. and was decorated by them. A fiery orator, with no constructive ability, the Dutch naturally refused to have any dealing with him. All through the year fighting had never ceased and there was continual guerrilla sniping by Soekarno's followers. Meanwhile there were still over 30,000 internees—Dutch women and children, Eurasians and Javanese Christians in the extremist's hands, all of them weak and emaciated to the edge of starvation and subjected to the loss of all self-respect. Yet the men who could thus treat their fellow-creatures (some of them their fellow-countrymen) claimed the right to rule 40 millions of Javanese. The next important development was the draft agreement signed by Dutch and Indonesian delegates at Cheribon (Nov. 18, 1946), by which the Dutch Gov. recognised the gov. of the republic of Indonesia as exercising *de facto* authority over J., Madoera, and Sumatra. The areas then occupied by allied or Dutch forces were to be included gradually through mutual co-operation in Republican ter. and measures were to be taken at once to ensure that this inclusion was completed by Jan. 1, 1949. The Indonesian question, however, was by no means so near settlement as that agreement implied. Indeed the final cease-fire was not jointly ordered by the Dutch and Republican Govs. until Aug. 1949. This order followed the winding up of the 'preliminary conference' of Dutch and Republican representatives held at Batavia before the ensuing round-table conference at the Hague. At the same time an inter-Indonesian conference, held to settle the principles of the constitution of the 'Republic of United Indonesia' as the new state was to be called, reached agreement on controversial issues concerning the inner cabinet and the senate. (See also INDONESIA).

See D. Campbell, *Java: Past and Present*, 1915; *Encyclopaedie van Nederlandsch-Indië*, 1917 ff.; H. S. Banner, *Romantic Java as it was and is*, 1927; E. T. Campbell, *A Commercial Handbook of the Netherlands East Indies*, 2nd ed. 1927; H. Ponder, *Javanese Panorama*, 1942; and *In Javanese Waters*, 1944;

**J. Fabricius**, *Java Revisited*, 1917; **J. S. Furnival**, *Colonial Policy and Practice. A Comparative Study of Burma and Netherlands, India*, 1948.

**Javary**, see **JABARY**.

**Java Sparrow**, see **RICE BIRD**.

**Java Sea**, sometimes called the **Sunda Sea**, situated between Java and Borneo, and stretches from the W. of Celebes to the E. of Sumatra.

**Javae**, or **Jabea** (anct. *Xidea*), fn., 45 m. N.E. of Alicante, Spain. Its products are wines, lemons, mandarin oranges, and muscatel raisins. Pop. 6600.

**Javolenus Priscus**, eminent Rom. jurist, b. about the beginning of the reign of Vespasian (A.D. 79). His master was Caelius Sabinus, and he became a leader of the Sabinian or Cassian school. Priscus was a member of the council of Antoninus Pius. See *Pliny the Younger, Ep.*, vi., 15.

**Jaw**, bones forming the framework of the mouth. In man the upper J. is termed the superior maxilla; the lower J. the inferior maxilla or mandible. The latter, the largest bone of the face, consists of a horizontal portion and two upright portions, called the rami. Both Js. bear teeth (q.v.). The closing and opening of the J. is effected by four pairs of muscles, two attached to the outer, and two to the inner side of the ramus of the lower J.

**Jawhar**, state of the Konkan div. of Bombay Prov., India. Area 310 sq. m. Prin. products, teak and rice. The chief vil. is J. Pop. 50,000.

**Jawor**, see **JACER**.

**Jaworow**, tn. of Ukrainian S.S.R. Its chief industries are brewing, distilling, and pottery making. In the famous li. gardens is the castle which was the residence of King John Sobieski, of Poland. Szko near by is known for its sulphur springs. Pop. 15,000.

**Jaworzno**, tn. of Ukrainian S.S.R., 30 m. W.N.W. of Cracow. There are petroleum wells, coal mines, and zinc-smelting works. Pop. about 13,000.

**Jaxi**, see **JACSR**.

**Jay**, or *Garrulus glandarius*, species of the sub-family Garrulinae and of the crow family (Corvidae), and is a native of Europe, while other species of the same genus are found in India and other parts of Asia and in Japan. In the New World the blue Js. (*Cyanocitta*) are found in N. America and *Cyanocorax* in Central and S. America, these latter birds being more blue than the common J. In England the common J. has become rare owing to persecution, and this is the case in Scotland and in some parts of Ireland. It is characterised by a crest of black and white feathers, a black tail, and white and black bars on the wing coverts, its body being a brownish colour on the upper surface and lighter underneath. It has also patches of blue. The Js. are shy and retiring in their habits, and have a screeching cry with the power to vary it by mimicking other birds. They feed chiefly on snails, insects, worms, and nuts. They hide their nests in trees with thick foliage and lay about six or seven eggs at a time.

**Jay, Harriett** (1863-1932), Scottish author and actress, was brought up by Robert Buchanan, the Scottish poet and writer, who married her elder sister. She collaborated with Buchanan in sev. of his works, e.g. *The Shopwalker* and *Two Little Maids from School*, and pub. independently: *The Queen of Connaught* (1875), *Madge Dunraen* (1879), *Two Men and a Maid* (1881), *A Marriage of Convenience*, (1883) and *The Life of Robert Buchanan* (1903). As an actress she also won great distinction.

**Jay, John** (1754-1829), Amer. politician and lawyer, b. at New York. He drew up the constitution of New York State in 1777, and was appointed judge. He became president of the Congress in 1778. In 1789 he was made chief justice of the Supreme Court. In 1791 he drew up a treaty, called the Jay Treaty, whereby the inland trade between the United States and Brit. N. America was properly organised in the interests of both countries. J. became governor of New York in 1795. He was a very able politician, especially in the field of international politics. Lives have been pub. by W. Jay, 1833; W. Whitelocke, 1887; and G. Fellow, 1890.

**Jay, William** (1769-1853), Eng. Non-conformist minister, b. at Tisbury, Wiltshire, England. Early in life he worked as a mason. Cornelius Winter provided for him to be educated as a minister. His devotional writings had a vast circulation in England and America. See G. Redford and J. A. James (ed.), *Autobiography of William Jay*, 1854.

**Jay, William** (1789-1858), Amer. abolitionist, b. in New York. He became a judge in 1818. He founded the Amer. Bible Society (1815), but the greater part of his energies were devoted to anti-slavery interests. The Anti-Slavery Society had in J. one of its most fervent and eloquent members. In 1833 he pub. the *Life and Writings of John Jay*. See B. Tuckerman, *Jay and the Constitutional Movement for Abolition*, 1893.

**Jayadeva**, Hindu poet, best known as the author of the mystic poem, *Gita-govinda*. His date is disputed; Lassen believes he fl. in the twelfth century. He is considered the finest lyric poet of India. See Sir W. Jones, *Poems, consisting chiefly of Translations from the Asiatic Languages*, 1777; Sir E. Arnold, *The Indian Song of Songs from the Gita Govinda of Jayadeva*, 1875; and *Indian poetry*, 1881.

**Jazyges**, Sarmatian tribe, who lived N. of the Sea of Azov. In the first century A.D. some of them settled in Hungary, others N. of the Carpathians.

**Jazz**, name given to the development after the First World War of dance music, a musical idiom deriving in mood, it is claimed, from negro folk-song and based technically on the device of syncopation, that is, on delayed or misplaced accent. The term is often misapplied to what may more accurately be called 'ragtime,' a crude attempt to give vitality to dance music which was practised in England during and immediately after the First World War, and which was remarkable only for



its sterility. J., or, as it has also been called, symphonic syncopation, was introduced into England from America in 1924, when Paul Whiteman's band made a tour of the country. Since then it has developed very rapidly, though only remarkably in the instrumental virtuosity of its exponents. The early jazz musicians, like the early medieval choirs, improvised a rudimentary counterpoint while listening to the melody. But now their tunes are elaborately and variously scored, and the quality of present-day dance bands is to be judged chiefly by the harmonic and rhythmical resources of the orchestrator. Although J. has still to win the approval of serious musicians, it will undoubtedly be part of the social hist. of the early twentieth century. Mr. T. S. Eliot has suggested the effect the internal-combustion engine has had on our perception of rhythms. Something of the sort seems responsible for the popularity of J., combining, as it does, an easily repeated formula of melancholy, very welcome to the emotionally bankrupt or wasteful, with the comforting reliability of a precise engine beat. 'A hypnotised abandonment of self, it has been shrewdly defined, to the exact rhythms of machinery.' See A. Casella, *Il Jazz and Della Musica Necessaria* in 'L'Italia Letteraria,' and reprinted in '21 + 26' (Rome), 1931 and W. Hobson, *American Jazz Music*, 1940.

**Jeanne d'Albret** (1528-72), queen of Navarre, the daughter of Henry, king of Navarre, duke of Albret and peer of France, and Margaret, sister of the Fr. king, Francis I. She married Anthony de Bourbon, duke of Vendôme, and their son Henry became Henry IV., king of France.

**Jeanne d'Arc**, see **JOVN OF ARC**.

**Jeanneer**, Charles Edward, see **LE CORBUSIER**.

**Jeanette**, bor. of Westmoreland co., Pennsylvania, U.S.A., 23 m. S.E. of Pittsburgh. It has a supply of natural gas. Pop. 16,200.

**Jeanes**, Sir James Hopwood (1877-1916). Eng. mathematician, b. at Southport, son of W. T. Jeanes, a parl. journalist. Educated Merchant Taylors' School; Trinity College, Cambridge; 2nd wrangler, 1898; Smith's prizeman, 1900. Fellow of Trinity, 1901; univ. lecturer in mathematics, 1901. Prof., applied mathematics, Princeton Univ., 1905-09. Stokes lecturer in applied mathematics, Cambridge, 1910-12. Awarded Adams Prize in 1917 for essay *Problems of Cosmogony and Stellar Dynamics*. Secretary to Royal Society, 1919-20. Research associate, Mt. Wilson Observatory, 1923. President, Royal Astronomical Society, 1925-27. Knighted, 1928. O.M., 1939. President, Brit. Association, 1934. One of his first scientific investigations was that resulting in the proof of Maxwell's law governing the distribution of velocities among molecules, his studies in this field being pub. in 1904 as *The Dynamical Theory of Gases*. At Princeton in 1906 he pub. his *Elementary Treatise on Theoretical Mathematics*, and, two years later, his *Mathematical Theory of Electricity and Magnetism*, the various eds. of which afford an indication

of the development of the Quantum Theory, on which latter, in 1914, he made a report to the Physical Society entitled *Radiation and the Quantum Theory*. But his most impressive work was that which he accomplished in the sphere of cosmogony, on which he pub., besides the essay above, *Astronomy and Cosmogony* (1928). In this field his most striking achievement was his explanation, following Chamberlin and Moulton, of planets and their satellites as being due to tidal forces raised in a star by the close passage of another star. The completeness of these mathematical investigations destroyed the nebular hypothesis of Kant and Laplace. He also threw some light on the conjectural source of stellar radiation and energy. His popular expositions of science enjoyed phenomenal sales—less surprising in view of the attractive style of his treatises, the non-mathematical sections of which may be enjoyed even by the layman. These popular books also include J.'s contentious philosophical deductions from modern science. He stressed the part played by mathematics in science to a degree scarcely equalled since Pythagoras. Other works: *Atomistic and Quanta* (1926), *Eos, or the Wider Aspects of Cosmogony* (1928), *The Mysterious Universe* (1930), *The Universe Around Us* (1930); *The New Background of Science* (1933), and *The Growth of Physical Science* (pub. in 1947).

**Jebail**, or **Jebel** (1 anc. *Byblos*), tn. on the coast of Syria, near Mt. Lebanon, and 18 m. N.N.E. of Beirut. It has old walls, a fine citadel, a castle dating from the crusades, and an interesting mediaeval church. Many sarcophagi were found here during excavations. The old walls are 1½ m. in circumference. Pop. 350.

**Jebavy**, Václav, Czech poet, writing as 'Otakar Brežný,' b. 1865 at Počátky, S. Bohemia. Vols. of poems: *Secret Distances* (1895), *Dancing in the West* (1898), *Polar Winds* (1897), *Temple Builders* (1899), *The Hands* (1901). Fr. agy: *The Music of the Springs* (1903). Eng. trans. of his poetry have been made by Percy Paul Selverin: *Anthology of Modern Slavonic Literature* (1919), and *Otáka Brežný* (1921).

**Jebb**, Sir Richard Claverhouse (1811-1905), Scottish classical scholar and writer, b. at Dundee. He was senior classic at Cambridge in 1832. In 1837 he was made prof. of Gk. at Glasgow Univ., and in 1839 was appointed regius prof. of Gk. at Cambridge. He was chief promoter of the inter-collegiate classical lectures at Cambridge, and helped to organise the Cambridge Philological Society. He was also one of the founders of the famous Brit. School of Archaeology at Athens. In 1891 he became Unionist M.P. for Cambridge Univ. J. brought out some of the finest eds. of the Gk. classics. His best works are perhaps his ed. of and commentary on *The Attic Orators from Antiphon to Isaeus* (1876), and his ed. of the works of Sophocles with trans. and commentary in 7 vols. His other works include: *The Characters of Theophrastus* (1870), *A Primer of Greek Literature* (1877), *Modern*

Greece (1880) *Introduction to Homer* (1887), *Growth and Influence of Greek Poetry* (1893) and *Bacchylides* (1905) See Lady Caroline Jebb *Life and Letters of Sir Richard Claverhouse Jebb*, 1907

Jebel al-Tur, see OLIVUS MOUNT OF

Jebel Barkal, see BARKAI

Jebel Druse, lcr of the mandated state of Syria with its seat of gov at Lq Suweidch It lies S of Hama In 1941 during the Brit invasion of Syria it was occupied by a Brit cavalry brigade and the Fr garrison marched out

Jebel-el-Tarik, see GIBRAITAR

Jebel en-rahm, see ARARAT MT

Jebel-ash-Sheikh, see HERMON

Jebel-Nur, mt, near Mecca, Arabia The Moslems believe that here Mohammed received the Koran from the angel Gabriel

Jebel Shammar, Shummer or Shomer, dist of Central Arabia in the N of Nejd It contains two granite ridges traversing it from E to W, one of which is about 6000 ft high The cap is Hail During the Arabian war much fighting took place in this dist and in 1921 Hail was captured and the dist annexed by Ibn Saud Pop 170 000

Jebusites, Canaanitish tribe mentioned frequently in the O T Their home Jebus is sometimes regarded as an earlier name for Jerusalem which was in their possession until its citadel was captured by David The J were eventually reduced by Solomon to slavery

Jecoliah, see JIHOLACHIN

Jedburgh royal burgh and the co tn of Roxburghshire, Scotland situated on Jed Water 56 m by rail S of Edinburgh The name was originally Jedworth and is now known in the vicinity as Jethart The tn itself is an old one being one of those which played a part in the Border wars The abbey, which dates from the twelfth century, is the remains of the church attached to an Augustinian priory founded by David I and laid low by the Eng during the first half of the sixteenth century The old castle was destroyed in 1409 and in its place now stand the remains of a prison This tn is also associated with Mary Queen of Scots, Prince Charles Edward, Burns and others It is the chief seat of the woollen manu in the dist, and has also iron foundries Pop 3500

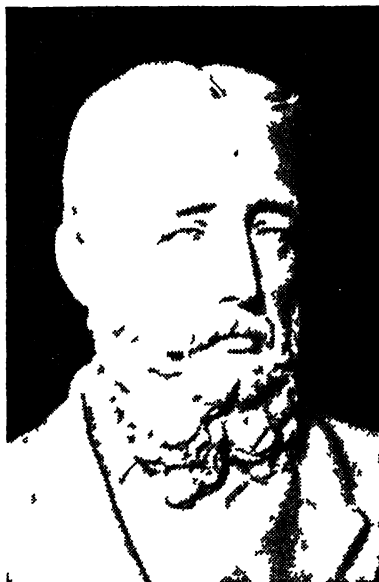
Jedda, Jeddah, or Jiddah, prin seaport of Hejaz Arabia, situated on the Red Sea, between 50 and 60 m W by N of Mecca, of which tn it is the port Consequently the pilgrims bound for that city disembark here a great number visiting it annually It exports hides, mother of pearl, coffee, and carpets A municipal council has been set up in the tn The members are chief officials and persons who are nominated or approved by the king of Saudi Arabia Subject to the royal approval, resolutions passed by the council become law On May 27, 1927, Great Britain recognised the complete independence of the dominion of Ibn Saud, king of Hejaz, in a treaty signed at Jeddah The Fr nation raised its consulate at Jeddah to the rank of a legation in 1929 Its example was followed

by Great Britain and Turkey and Holland are also represented as well as the Soviet Gov Pop about 40,200

Jedo, or Jeddo, see TOKYO

Jeejeebhoy, Sir Jamsatjee Bart (1783-189) Indian merchant and philanthropist b at Bombay He gave hospitals, schools, colleges, and public works In 1842 Queen Victoria bestowed knighthood on him, and in 1858 a baronetcy

Jefferies, John Richard (1848-87), Eng naturalist and novelist, son of a small farmer was b at Coate Farm, near Swindon, Wilts He went to school at Wydenham then at Swindon until he was about fifteen but his most inspiring teachers were his father and a keeper on a neighbouring estate who made him acquainted



N P G

RICHARD JEFFERIES

Plaster cast from a bust by Margaret Thomas

with the wonders of nature and taught him to use his powers of observation In deed it is said that he really owed his first work of any value, *The Gamekeeper at Home* (1878) to what he had learned from his close friendship with the Burdorp keeper whom he used to help as a youth by keeping down vermin on his pheasant preserves He began life as a journalist on the staff of the *North Wilts Herald* of which he was editor during 1866-67 His letter to the *Times* (1872) on 'The Wilts shire Labourer' brought him into public notice and thereafter he wrote for the *Pall Mall Gazette*, in which appeared his

*Gamekeeper at Home and Wild Life in a Southern County* (1879) both afterwards repub. Both these works are full of minute observation and vivid description of country life. They were followed by *The Amateur Poacher* (1880), by some considered his best work; *Wood Magic* (1881); *Round about a Great Estate* (1881); *The Open Air* (1885) (with a Brighton and Beachy Head background) and others on similar subjects. Among his novels are *Revis* (1882) in which he draws on his own childish memories and which has been described as the best boys' book in the language; and *After London, or Wild England* (1885), a romance of the future when London has ceased to exist. *The Story of my Heart* (1883) is an idealised picture of his inner life. *Life of the Fields* (1884) includes one of his best essays—*Clematis Lane*. Other works are: *Hodge and his Masters* (1880), *Nature near London* (1883), and *Amaryllis at the Fair* (1887). J. died after a painful illness, which lasted for six years. In his own line, that of depicting with an intimate knowledge of nature, all the elements of country life and wild life, plant and animal, surviving in the face of modern civilisation, he has had few equals. *Piccolino and Hodge* was pub. after his death (1889). See lives by E. Thomas, 1909; C. J. Massack, 1913; A. F. Thom, 1920, and R. Arkell, 1933. See also S. J. Looker (ed.), *Jefferson's England*, 1937; M. Elwin, *The Essential Richard Jefferies*, 1938; S. J. Looker (ed.), *The Nature Diaries and Note-books of Richard Jefferies*, 1938.

**Jefferson, Thomas** (1743–1826), third, and one of the greatest Presidents of the U.S.A., b. at Shadwell, Albemarle co., Virginia, the son of a planter. He was of Welsh origin. A member of the second Continental Congress of the thirteen Amer. colonies, he sprang into fame in America's pantheon by writing the Declaration of Independence, which was adopted with but a few slight changes. He was made governor of Virginia in 1779, and narrowly escaped capture by Tarleton. He succeeded Benjamin Franklin as the Amer. envoy to France, and later when Washington became President of the U.S.A. he made J. secretary of state. It was largely due to J. that the cap. of the U.S.A. was estab. on the banks of the Potomac R., in what is now the city of Washington, and he himself afterwards was the first President inaugurated there. In 1796 Hamilton was the natural leader of the Federalist party, but John Adams was nominated for the Presidency. J., as the leader of the Republican, which afterwards became the historic Democratic party, ran against him. Adams was elected President, and J. Vice-President. In 1800 J. once more ran for the Presidency with Aaron Burr as his party's candidate for Vice-President. Jefferson's party won, but both J. and Burr had received an equal vote. J., however, was chosen by the House of Representatives on the advice of his old antagonist Hamilton. In 1804 J. was re-elected by an overwhelming majority. The greatest and most far-reaching act of his Presidency was the Louisiana purchase, where-

by the U.S.A. secured a vast ter. W. of the Mississippi R. some 1,171,931 sq. m. in extent. This purchase completely changed the future hist. of the U.S.A. It paved the way for continental expansion. It made the Mississippi entirely an Amer. owned riv. During J.'s term also the U.S.A. sent an expedition against the Tripoli pirates and stopped their raids, considerably reduced the national debt, and issued the famous embargo act prohibiting the sailing of Amer. vessels for foreign ports while the Brit. and Fr. navies were chasing each other on the high seas. At the close of his second term, the legislatures of eight states asked him to run for a third term, but he declined, thereby setting the precedent that no President shall serve for more than two terms—a precedent set aside for the first time in 1940 when President Franklin Roosevelt became President for his third term.

J. was a statesman of compromises; for J. the philosopher, in the eighteenth century sense, was rather a different man from J. as manager of his own large properties and as office-holder. Thus, while he hated slavery and tried to suppress the traffic he remained the owner of 200 negroes; he was always suspicious of bankers, yet he turned to London for the funds needed for the Louisiana purchase; and he hated political chicanery, yet he must have been aware that a bargain was being struck between his supporters and those of Alexander Hamilton to obtain his election as president. Such compromises, however, are the price of political pre-eminence. Nevertheless the positive and outstanding achievements of J. were very great: in his own state of Virginia, the termination of feudal land tenure, separation of Church and State, the foundation of a programme of free education; in the United States, the public land system, the Bill of Rights, and the Louisiana purchase—besides considerable contributions to the theory of checks and balances among the executive, legislative and judicial branches of the federal constitution.

J. retired to his home, Monticello, in Virginia, and in his old age founded the Univ. of Virginia near Charlottesville. A curious thing about J. is the epitaph he wrote for his own tomb. He, who had held so many high offices at the hands of his countrymen, wrote this: 'Here was buried Thomas Jefferson, author of the Declaration of American Independence, of the Statute of Virginia for Religious Freedom, and Father of the university of Virginia.' He died on July 4. A memorial tablet was unveiled to J. in 1933 at Glyncorrwg, N. Wales, of which vil. his father was a native. He made an important contribution to the Revolutionary cause in *A Summary View of the Rights of British America* (1774). See M. Beloff, *Thomas Jefferson and American Democracy*, 1948; J. Dewey, *Jefferson*, 1913; D. Malone, *Jefferson the Virginian*, 1949.

**Jefferson City**, cap. of Cole co. and of the state of Missouri, situated about 110 m. W. of St. Louis. There are flour mills, foundries, and machine shops and shoe,

clothing, harness, motors and other factories. Coal and limestone are found in the dist. It contains the state house, court house of Lincoln Univ., and sev. other institutions. Pop. 21,200.

**Jefferson River**, riv. of the U.S.A. It rises in S.W. Montana and finally joins the Madison and Gallatin rvs., the three streams forming the Missouri. It is about 150 m. long.

**Jeffersonville**, city of Indiana, U.S.A., co. seat of Clark co. It stands in a rich farming dist. on the Ohio, opposite Louisville, Kentucky. The city possesses railway works, machine shops, and iron foundries. Pop. 11,400.

**Jeffries, Ellis** (1872-1943), Eng. actress, b. at Colombo, Ceylon. Associated with Cyril Maude at the Haymarket, where one of her greatest successes was in W. H. Davies's comedy *Cousin Kate*. She began her career at seventeen in the chorus of the Savoy Opera and played in pantomime and light opera. Sang most of the female parts in *La Cigale* at the Lyric Theatre. She then took part in comedy with Charles Wyndham at the Criterion, in *The Bauble Shop* and other plays by Henry Arthur Jones, with John Hare at the Garrick, in America in *The Notorious Mrs. Ebb Smith*, and at the Duke of York's in *The Marriage of Kitty*. Tall, graceful, with a clear, incisive utterance, she was a true comedian, but was not deficient in the dramatic force required for such rôles as those of Zicka in *Diplomacy* and Olga in *Fedora*. Began a film career in 1930, appearing in *Eliza Comes to Stay*, *The Return of a Stranger*, and other pictures. Twice married, her first husband being the Hon. Frederick Curzon, son of Earl Howe, their son being well known on the stage as George Curzon.

**Jeffrey, Francis Jeffrey, Lord** (1773-1850), Scottish judge and critic, educated at Edinburgh, Glasgow, and Oxford. Meeting for years with little success, either as lawyer or journalist, his opportunity came in 1802, with the founding of the *Edinburgh Review*. Sidney Smith was first editor, but when he removed to London in 1803 J. was placed in charge. Retaining control for twenty-six years, he raised the *Edinburgh* to the highest rank. In 1806 J. went to London, where he had his famous duel with Moore, so satirised by Byron. In 1830 he was made Lord Advocate, and entered parliament. In 1834 he accepted a judgeship and a peerage. Among his critical works are *Samuel Richardson* (1853) and *Jonathan Swift* (1853). See *Hives* by Lord Cockburn, 1852; T. Carlyle, 1881; J. Taylor, 1892; and R. Bald, 1925.

**Jeffreys of Wem, George Jeffreys, Lord** (1648-89), Lord High Chancellor of England, b. at Acton, Denbighshire. In 1668 he was called to the Bar, and in 1683 became Lord Chief Justice. As the records of J.'s life are derived from hostile sources his reputation for injustice and cruelty must be accepted with some reserve. His conduct of the trial of Algernon Sidney is considered to have been fair in general. The action for which J. is most notorious is his presidency of the Bloody Assize

(1685), whereby over 300 victims were drawn and quartered, and a thousand sent as slaves to the W. Indian plantations. In opposition to the Long Parliament the Court of High Commission was revived and J. placed at its head (1686). In 1688 J. was the king's chief instrument in securing the committal to the Tower of the seven bishops. But the fall of James II. drew in its train the fall of J.; he fled, was arrested, and died miserably in the Tower. See H. B. Irving, *Life of Jeffreys*, 1898, and H. Montgomery Hyde, *Judge Jeffreys*, 1940, 1948.

**Jegni Pangola**, see **TOVI**.

**Jehangir**, or **Salim Nureddin Mohammed** (1569-1627), became king of Delhi and Agra in 1605, succeeding his father Akbar. Previously to his accession to the throne he had rebelled against his father and had attempted to seize Agra. The most important events of his reign were the wars in the Deccan and Udaipur, and the loss of Kandahar. During the last decade of his reign, his captains rose in insurrection, and his sons entered into a conspiracy against him. J. has left a vol. of memoirs entitled *Jehangiri*, full of delightful self-revelations and side-lights on court life in India. Capt. Hawkes visited the king at Delhi, and has also left an entertaining vol. of memoirs descriptive of this reckless ruler.

**Jehlam**, see **JHELUM**.

**Jehoash**, see **JEASH**.

**Jehoiachin**, called **Jeconiah**, king of Judah, succeeded his father, Jehoiakim, in 597 B.C. He only reigned for three months, being dethroned by Nebuchadnezzar and carried into captivity at Babylon. But in the thirty-seventh year of his captivity Evil-merodach, king of Babylon, released him, and granted him an allowance for the rest of his life (see 2 Kings xxiv. 6-16; xxv. 27).

**Jehoiada**, high priest of Judah, during the reigns of Ahaziah, Athaliah, and Joash. When Athaliah, the mother of Ahaziah, sought to destroy all the seed royal, J. protected Joash, the young son of Ahaziah, in the temple, and subsequently anointed him king while the guard slew Athaliah, the usurping queen, on his instructions. J. then destroyed the house of Baal, instituted a public fund for the repair of the temple, and executed the work of restoration (see 2 Kings xi. and xii. and 2 Chron. xxiii., xxiv.).

**Jehoiakim**, or **Eliahim**, king of Judah (608-597 B.C.), son of King Josiah and Zebudah, the daughter of Pedaiiah, received the throne as a vassal of Pharaoh-nechoh. But Nebuchadnezzar, king of Babylon, sacked Jerusalem, and J. became his vassal for three years (c. 605-602 B.C.). His revolt from allegiance to Babylon roused an attack on Jerusalem by the Chaldeans and Syrians. Jerusalem was sacked and the king slain (see 2 Kings xxiii. 34 ff., xxiv. 1-5; 2 Chron. xxxvi. 4-8).

**Jehol**: (1) Prov. of China. Area, 74,278 sq. m. Pop. 6,110,000. (2) or **Changteh**, cap. of J. prov., 115 m. N.E. of Peiping. It was the summer resort of the last emperor of China.

**Jehoshaphat** (c. 876-851 B.C.), king of Judah, succeeded his father Ashal, and commenced his reign as an able and wise ruler, rooting out idolatry, and building strongholds throughout the land. But the prosperity of his reign was reversed when he sought affinity with Ahab, king of Israel. Ahab, seduced by false prophets and in opposition to the warning of Micaiah, set forth on an expedition against Ramoth-gilead, and persuaded J. to join him. Ahab succumbed to a wound received in the battle, and J. only just escaped with his life. J. returned to Jerusalem and reformed the judges and priests, and carried out a successful campaign against Moab and Ammon. But ruin awaited a mercantile expedition to Tarshish sent by J. in conjunction with Ahaziah, king of Israel (see 1 Kings xv. 24; 2 Kings iii.; 2 Chron. xvii.-xx.).

**Jehoshaphat, Valley of**, mentioned in Joel iii. 2 as the place where the Lord shall pronounce His judgments against the enemies of His people. The valley has been identified with the valley of Berachah where Jehoshaphat triumphed over Ammon and Moab (2 Chron. xx. 26), but the probable site of the valley is the gorge situated between the Mt. of Olives and the Mt. of the Temple.

**Jehovah**, prin. name for God in the O.T., appearing nearly 7000 times. It is now felt that there is no authority for such a pronunciation, which is founded on a misapprehension. The original word, known as the Tetragrammaton, consists of the letters JHVH, or better, YHWH. This name came to be considered too ineffable to pronounce, and hence the vowels of the word *Adonai* (lord) were inserted, as a direction to the reader to replace it by this word. Thus we have the form Yehovah, of JelloVail—hort e taking the place of short a. If the Tetragrammaton is preceded by the word Adonai, the vowels of *Elohim* (God) are inserted, giving the form Yehovahi. There has been much controversy both as to the original form of the word and also as to its origin and meaning. The early theory is now almost abandoned, there being general agreement in the acceptance of Ewald's suggestion that the true form is Yahweh. The forms Yahu and Yah also occur, both separately and as a component part in proper names. The question as to the origin of the title is more difficult. Exodus iii. 13 and vi. 3 imply that it was first revealed to Moses, but it had already been used earlier (e.g. Gen. iv. 26). The use of the name, indeed, formed the chief means by which the composite authorship of Genesis was discovered (see HETATEUCH). Some have held that it was borrowed from the Kenites who inhabited the region around Sinai, and that the Mosiac revelation was only one of meaning and application. The meaning is given in Exodus iii. 14, by God himself, as 'I am that I am,' and later simply 'I am,' and according to this interpretation, which is generally accepted, the word is the third person singular imperfect of the archaic stem HWH (to be). Many scholars, however, have

regarded the idea as too abstract for so early a period, and have sought for a more concrete explanation.

**Jehu**, son of Jehoshaphat, and grandson of Nimri, was king of Israel during the latter part of the ninth century B.C. He was general under Jehoram, and during the illness of that prince at Jezreel he seized the throne, and proceeded to secure it by wholesale slaughter (see 2 Kings ix. ff.). He justified his cruel actions by the words of Elijah and the prophets. Eli-ha seems to have supported him as a useful substitute for Jehoram, from whom little action could have been expected. J. is mentioned in a tablet of Shalmaneser II. (842 B.C.) as paying tribute to Assyria. J. was noted for his reckless chariot driving: hence the modern application of the name to reckless drivers.

**Jeisk**, or **Yeisk**, tn., in the Kuban Valley, Caucasia, Russia, on the S. shore of the gulf of Taganrog in the Sea of Azov. Its exports include corn, flax, and wool. Pop. 60,000.

**Jejunum**, meaning empty, one of the three arbitrary divs. of the small intestine (q.v.). It is about 1½ in. wide, and 8 ft. long, and is the connecting portion lying between the duodenum and the ileum. In general, its structure resembles that of the duodenum.

**Jelalabad**, see JALALABAD.

**Jelal-ud-din**, or Rumi, famous Sufi poet of Persia, b. at Balkh in Khorasan. In memory of his son Ala-uddin, and his instructor Sufi Shams-uddin, both killed in a mob riot, he founded the order of Maulawi dervishes. This order is characterized by the mystic dance (Sema), symbolical of the movement of the spheres and of the soul. His most famous works are his odes, mainly composed in honour of the Maulawi dervishes, and his great poem the *Mithnawi*.

**Jelenia Cora**, see HINSBERG.

**Jelgava**, **Mitau**, or **Mitava** (Lat. Mit-tavia, Lettish *Felgava*), tn. in the Latvian S.S.R., on the Aa. 25 m. S.W. of Riga. It was formerly the cap. of Courland and the residence of the dukes in the sixteenth century. There are tanneries, flax and saw mills, and oilcloth works, etc. In the Second World War J. was in Ger. occupation until 1944, the Russians recapturing the tn. on July 31 of that year. Pop. 31,000.

**Jellaichio**, **Joseph**, Baron von (1801-59), Austrian general and administrator, b. at Peterwardin. He gained the confidence of the Croats, and was appointed Ban of Croatia (1848). He took the chief part in suppressing the Magyar Revolt (1848-1849), and commanded his troops against Montenegro (1853). He wrote and pub. poems.

**Jellicoe**, **John** Rushworth Jellicoe, first Earl (1859-1935), Brit. admiral; b. at Southampton; younger son of Capt. John H. Jellicoe, commodore of the Royal Mail Steam Packet Co.; and great-grandson of Adm. Patton, Second Sea Lord at the time of the battle of Trafalgar. After some schooling at Rottingdean, J. passed the preliminary examination for the navy

at the age of twelve and entered the training-ship *Britannia*. Became sub-lieutenant, 1878; lieutenant, 1880, with three first-class certificates. In 1881 he was appointed to H.M.S. *Agincourt*; he was present at the bombardment of Alexandria, July 1882; and he accompanied the naval brigade that marched with Wolseley to Cairo and fought at Tel-el-Kebir. Returning home, he won an £80 prize for 'gunnery-lieutenants,' 1883. His next ship was H.M.S. *Monarch*; from her, in May 1886, J. performed a life-saving feat for which he received the Board of Trade medal. He was for a while gunnery-lieutenant on H.M.S. *Colossus*; then junior staff-officer on H.M.S. *Excellent*; then first lieutenant on H.M.S. *Sans Pareil*. He was for three years assistant to Capt. (afterwards Lord) Fisher, director of naval ordnance. J. became commander in 1891, and was on board H.M.S. *Victoria* when she went down in the Mediterranean, June 22, 1893. He



LORD JELICOE

E.N.A.

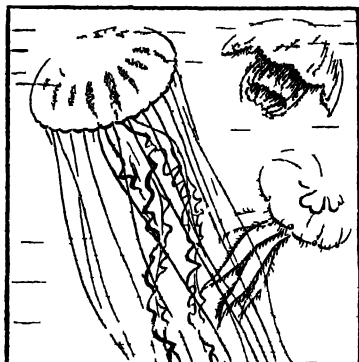
next served in H.M.S. *Ramillies*; then, becoming captain in Jan. 1897, he became flag-captain on H.M.S. *Centurion*, and was chief of staff to Vice-Adm. Sir E. Seymour during the attempted relief of the Peking legations, 1900; severely wounded at Peltzang. He was naval assistant to the controller of the Navy 1902-03, and was then appointed to command of H.M.S. *Drake*. Director of Naval Ordnance, 1905-07; he greatly improved the shooting abilities of the navy. He was made rear-admiral, Feb., and K.C.V.O., Aug.

1907; was rear-admiral in Atlantic Fleet, 1907-08; lord commander and controller of the Navy, 1908-10; vice-admiral, 1910; in command of the Atlantic Fleet, 1910-11. He commanded the second division home fleet, 1911-12; and was Second Sea Lord, 1912-14. In 1913, for a while, he left his shore duties to command the 'Red' Fleet in manœuvres. On the outbreak of the First World War, J. was given command of the Grand Fleet. He became full admiral, March 1915; and thenceforward till near the end of 1916 the fleet's hist. is his—especially the battle of Jutland, May 31, 1916; wherein his flag flew on H.M.S. *Iron Duke*, and after which the Ger. fleet kept in harbour until its time for surrender. At the end of Nov. 1916, J. was made First Sea Lord, and relinquished command of the fleet to Sir David Beatty. He became chief of the Naval Staff, 1917. Suddenly ceased to be First Sea Lord at the end of that year, being succeeded by Sir Rosslyn Wemyss. No official explanation was given of the abrupt dismissal. He was elevated to the peerage as Viscount J. of Scapa, and, later, received the thanks of Parliament together with a grant of £50,000. After the Armistice, he toured the Dominions in H.M.S. *New Zealand*, to prepare for reorganisation of Empire navies. Governor of New Zealand, 1920-23. He retired from the service in 1924, and in 1925 was made Earl J. and Viscount Brocas of Southampton for his part in the battle of Jutland, see JUTLAND, BATTLE OF. He pub.: *The Grand Fleet, 1914-16, its Creation, Development and Work* (1919), *The Crisis of the Naval War* (1920) (which narrates the chief features of his work in the critical year of 1917), *The Submarine Peril* (1934, on the peril of 1917 and its lessons for the future). See life by R. H. S. Bacon, 1936.

Jelly, solid state of matter produced by the addition to a liquid of some colloid substance, e.g., gelatine. A distinguishing feature of J. is its elasticity. Js. are much used as an article of food, and are eaten as sweets or savouries. The best J. is made from calves feet, and is very strengthening. Ox-foot J. is also an excellent dish for invalids. Gelatine is much used in the making of sweetmeats, e.g. in gums and pastilles. Of vegetable Js. agar-agar is well known, and is useful as a media in bacteriology. Of the inorganic Js. that produced from a solution of silicic acid is best known. See also PRESERVING.

Jelly-fish, bell-shaped or disc-shaped marine hydrozoa, embracing Medusae, Ctenophora, and Siphonophora. In the Medusae the body is shaped like a bell or a parachute. The body is bordered by a fringe of writhing tentacles, supposed to resemble the snake-locks of the gorgon Medusa—hence the name. The animal normally swims with its subumbrellar surface downwards. The distinguishing feature of the J. is the mesoglea, a diaphanous and gelatinous secretion layer, situated between the ectoderm and the endoderm, and developed in great quantity. On the subumbrellar surface is the mouth, bordered by four lips which bear stinging threads.

The muscular system is arranged in a circular formation on the under surface of the umbrella. The muscles contract and the water is thereby pumped from the sub umbrella, and the animal is jerked upward. This is the only means of locomotion. Medusae seize their prey by their



JELLY FISH

tentacles, the victim becomes paralysed and is drawn into the mouth. The *Ctenophora* are a species of J which have both radial and bilateral symmetry. They are bell shaped the mouth being situated at the broader end. They have eight meridians of iridescent paddles. Locomotion is effected by strokes of the paddle.

Jemappes, industrial tn in the prov of Hainaut, Belgium, 13 m W of Mons. Here the fr under Dumouriez defeated the Austrians and became masters of Belgium (1792). There are rich coal mines, glass, porcelain, crystal, iron and chemical works. Pop 12,300.

Jemeppe, Belgium tn, 13 m S W of the city of Liège on the Meuse. It has coal mines, freestone and marble quarries. Its chief industries are iron, glass and oil. Pop 13,700.

Jena, tn in Thuringia, Germany. It is situated on the left bank of the Saale, about 12 m S E of Weimar and is surrounded by lime stone hills. It is an old tn and contains among its buildings of interest the Luchs Turm, the Black Bear Inn, the place visited by Luther when fleeing from Wartburg, and most notable of all the buildings of the univ. founded in 1527. Schiller, Fichte, and Hegel being among its professors. On the same day, Oct. 14, 1806, two victories were won near the tn of J by Pr troops over the Prussians, the collective name for both being the Battle of Jena. In the second World War the Amer Third Army advanced through the Thuringian forest early in April 1945 and J was cleared by the 13th by the 4th Armoured Div which was soon at the outskirts of Chemnitz. Pop 53,000.

Jenghiz Khan (1162-1227), Mogul conqueror and emperor, son of a petty Tartar chief. By skill and ruthlessness during he gradually subdued all Mongolia, changing his original name of Temuchin to Jenghiz (perfect warrior). In 1212-14 he conquered N China. Four years later an insult offered to his envoys in Turkestan led to his invading that country with an immense host. In the first battle the Turks lost 160,000 men and for seven years the war raged with terrible cruelty, many cities being totally destroyed and their inhabitants massacred. J swept through Afghanistan into the Punjab, which he devastated returning afterwards to Turkistan. Another Mogul army penetrated to Russia as far as the Dnieper carrying off immense spoils. In 1225 J again attacked China (a turning point) and proved with frightful carnage, but died in return from the campaign. It is said that he intended exterminating the Chinese by turning their country into prairie, but was dissuaded by one of his councillors. His war are computed to have cost six million lives. Their greatest result was the opening into Asia Minor of various Turkic tribes who afterwards founded the Ottoman empire and invaded Europe. The empire founded by J soon broke up, much of it falling to Kublai Khan. See I. H. Hart *Great Captains*, Unwin 1927, and lives by F. Rashid al Din 1898, F. Krause 1922, and H. Lamb 1925.

Jenkin, Henry Charles Fleeming (1833-1885) Eng engineer. In 1853 he with Lord Kelvin made experiments in the manufacture and use of cables. His researches on gutta serena were of the utmost value. He was elected F.R.S. and was appointed prof. of engineering at Univ. College, London, in 1867, and at Edinburgh Univ. in 1868. He pub. a valuable text book on *Magnetism and Electricity* (1873). He invented telegraphy, an electric automatic system for transporting goods. See I. L. Stevenson's *Essays*, *Tall and Talkers*. Jenkin is Cock-shot.

Jenkins, Robert Fitz merchant sea captain of the W. Indies. He appeared before the House of Commons with one of his cars in cotton alleging that the Spaniards had boarded his vessel, accused him of smuggling, and cut off his car. This provoked war between England and Spain and led to the latter's downfall (1742).

Jenkinson, Anthony (d. 1611) Eng. merchant and sea captain. He visited Asia Minor and N. Africa (1546) and in 1557 was appointed agent of the Muscovy Company. He travelled to Bokhara (1558-59) and was commissioned to trade with Persia. By his efforts his company obtained the monopoly of the White Sea trade. See *Early Voyages and Travels in Russia and Persia* (Hakluyt Society, 1886), and biographical introduction by L. D. Morgan.

Jenkinson, Robert Banks see LIVERPOOL LARKS.

Jenne, tn, an important centre of commerce in Upper Senegal (Fr.), on the R. Niger 250 m S S W of Fimbuktu. Once the cap. of the Songhai empire.

Jenner, Edward (1749-1823), Eng. physician and originator of vaccination, b. at Berkeley, Gloucestershire. Left an orphan at six years old, he was brought up by his eldest brother, the Rev. Stephen J., and educated for the medical profession. In 1770 he became a pupil of the famous John Hunter, with whom he remained two years. Declining offers of advancement in London, he returned to estab. a practice in Berkeley, wishing to be near his brother. J. never passed a musical examination, such examinations not being compulsory in his time. He bought the degree of Doctor of Medicine from a Scottish univ. and later applied to Oxford univ. to grant him their honorary degree of M.D. and received it. He took great interest in the natural hist. of his dist. founded a local medical association, and was a general favourite in society. In 1788 he married Miss Kingscote. As a child J. had himself suffered the risk associated with the inoculation of smallpox matter,



EDWARD JENNER

After a print engraved and coloured by  
I. R. Smith

and from his apprenticeship days with Hunter he was curious about the popular belief in Gloucestershire that persons who contracted cow-pox were thenceforth immune from smallpox. J. mentioned to various people, including Hunter, his interest in the matter, but he got no encouragement in his researches. But years later, the popular belief became estab. as a conviction in his mind and he saw that, if it were possible to transmit the cowpox virus from one individual to another (by inoculating persons successively by the arm-to-arm method) the result would be an available source of cowpox lymph which would be independent of the existence or otherwise of the natural disease in

cows at any given time. If this could be done, he saw that another difficulty might arise: after transmission through many individuals the virus might lose its immunising power. J., having collected material to confirm his conviction concerning cowpox as a protective virus set out, in 1798, to investigate the above two propositions. After a number of experiments he pub. his results in his celebrated work, *An Inquiry into the Causes and Effects of the Variolæ Vaccinæ, a disease discovered in some of the Western Counties of England . . . and known by the name of the Cow-Pox* (1798). In the first ed. of the *Inquiry*, J. adopted the attitude that efficiently performed vaccination carried out with lymph taken at the right stage of the pock would give complete and permanent protection against smallpox, a view he maintained all his life. This was unfortunate because it was not true, though those who did contract smallpox suffered only from mild attacks. J. was the first to have the conception which is expounded in his *Inquiry* and the first to have the courage to test his doctrines. After him no one else attempted to extend the province of artificial immunity until Pasteur in 1880 introduced the inoculation of fowls for fowl cholera. All modern methods of preventing certain infectious diseases by immunological methods trace their ancestry back ultimately to the substitution by J. in 1798 of vaccination—which became an estab. fact by 1800. At first he met with great opposition, yet he secured a hearing from many influential persons including the royal family. Vaccination spread through England. Attempting in 1798 to introduce a system of vaccination in London, he met with great opposition, but nevertheless secured a hearing from many influential persons, including the royal family. Vaccination spread through England and other countries with such results that in 1802 parliament voted J. a grant of £10,000 (raised a few years later to £20,000), and on the Continent he was elected a member of most of the great scientific societies. At home, however, the jealousy of his professional colleagues led to much bickering and irritation; he was worn with incessant work, and the death of his wife in 1815 affected him greatly. He retired from public life, but continued his investigations until struck down by apoplexy.

Jenner, Sir William, Bart. (1815-98), Eng. physician, b. at Chatham, educated at Univ. College, London. In 1814 he became M.D., and in 1847 began a course of investigation by which he eventually proved the distinction between typhus and typhoid. He became prof. of medicine at Univ. College, physician to sev. great hospitals, and medical adviser to the royal family, attending the Prince of Wales in his attack of typhoid. Receiving a baronetcy in 1868, he was in 1881 elected president of the College of Physicians. Rather autocratic in manner, but kind and considerate, he was in such request as a consultant that he left a fortune of £300,000. His writings include important works on fever and diphtheria.



**Jennings, Sarah** (1660-1744), see **MARLBOROUGH**.

**Jenolan Caves, or Fish River Caves**, beautiful stalactite caves situated on the W. side of the Illue Mts., 113 m. W. of Sydney, New S. Wales.

**Jensen, Johannes Vilhelm, Dan.** novelist; b. 1873 at Farsø. A student at Viborg, 1893; studied philosophy and medicine. His first book appears to have been *Danskere*, a tale pub. (1896). His most important works are:—*Himmerland's Historier* (1898-1910), *Kongens Fald* (hist. novel of sixteenth century, 1899-1902), *Madame d'Ora* (1901), *Skovene* (1904), *Eksotiske Noveller* (1907-25), and a series of six novels together called *Den lange Rejse*, and descriptive of the progress of the Nordic race throughout ages. Other pub.:—*Det Blivende* (1934), *Dr. Renanilla Fjeldtser* (1935), *Gudrun* (1936), *Durduse* (play, 1937), and numerous short stories. Awarded Nobel Prize, 1911.

**Jensen, Peter Christian Albrecht** (b. 1861), one of the greatest authorities of the day on Assyriology. J. was born at Bordeaux, studied Hittite and Semitic archaeology, subsequently became prof. of Semitic philology at Marburg Univ. (1892). His works are: *Hittiter und Armenier*, (1898), *Assyrisch-babylonische Mythen*, (1900-01), section 'Hittites' in Hilprecht's *Explorations in Bible Lands* (1903), and *Das Gilgamesch Epos in der Weltliteratur* (1906), etc.; *Gilgamesch Epos, jüdische National sagen, Ithas und Odyssee* (1924).

**Jenson, Nicholas** (or Nicol) (1420-81), Master of the Mint at Tours in the reign of Charles VII. of France and, according to some, a Walloon by descent. The king, hearing of Gutenberg's printing experiments, sent J. to Mainz to obtain Gutenberg's secret. J. learned the trade, but subsequently migrated to Venice. It is believed, however, that in the years 1462-1470 he was associated with Sweynheim and Pannartz, two Ger. printers who had estab. themselves in a Benedictine monastery at Subiaco near Rome. At all events, he began printing at Venice about the year 1470, and there designed a rom. type of much beauty and merit that has been classic to the present time. He is mentioned in the *Cologne Chronicle* of 1498 as a printer to whom some had erroneously given credit of being the first inventor of the art. Extant portraits of him appear to be imaginary. See M. W. Haynes, *The Student's History of Printing*, 1930.

**Jephthah**, according to the narrative in Judges xi. 1 ff., was an illegitimate son of Gilead, after whose death he was driven out by his brethren. He became the leader of a band of freebooters, until he was recalled by the elders of Gilead to lead them against the Ammonites. This he refused to do unless he was afterwards made their judge, and this position was promised to him. He collected a large army and made a vow that if he was successful he would offer as a burnt-offering to Jehovah the first thing that came forth from his doors on his return. This vow led to the sacrifice of his daughter, which some tried to soften into a dedication of

her perpetual virginity. J.'s later exploits were against the Ephraimites. It has been suggested that two persons, Jair and J., are confused in this account.

**Jeppesen, Knud** (b. 1892), Dan. musicologist and composer, a pupil of Carl Nielsen (1865-1931). He occupies an eminent position in Dan. musical life as composer, educator and musicologist. After taking his musical degree, he continued his studies in Vienna with Guido Adler and Robert Lach, obtaining his doctorate of philosophy with his thesis 'The style of Palestrina and the Dissonance,' a detailed study of Palestrina's harmonic system. This work has been pub. in Dan., Ger., and Eng. As administrator and lecturer J. has held high posts at Copenhagen Conservatoire and Copenhagen and Aarhus Univs. He has written many works on music and ed. *Acta musicologica*, a quarterly concerned with musical science. Though not prolific as a composer, he has written a number of songs and motets and choral works, of which 'Lave og Jon' and a 'Cantata in celebration of the Reformation of 1536' are well known. His 'Te Deum Danicum' however, is probably his finest work, written for four soloists, two choirs and orchestra, the words being 'after the old version of the Ambrosian Hymn.'

**Jerablus**, see **CARCHEMISH**.

**Jerash**, see **GERASA**.

**Jerba, or Girba** (anc. Meninx), is. of Tunis in the gulf of Cabes, off Africa, has an area of 125 sq. m. It is separated from the mainland by a fordable channel formerly crossed by a Rom. viaduct. There are many Rom. remains, including a triumphal arch and two castles. It is very fertile; olives, dates, and oranges grow there. The inhabs. are occupied in sponge fishing. The chief tn. is Haumtes-Snk. Pop. of tn. about 3000; of is. 35,000.



JERBOA

**Jerboa**, name popularly given to members of the Dipodidae, a family of myomorphous rodents remarkable for their powers

of leaping. They are terrestrial animals, inhabiting the sandy or grassy plains in Asia, E. Europe, and N. Africa. *Dipus*, the typical genus, is from 6 to 8 in. in length, with a long tail and naked ears: the fore-limbs are very short and have five fingers, while the curiously elongated hind-limbs have only three toes. It is by means of these enormous legs that they are able to leap when in danger, but when undisturbed they walk on them in an ordinary way. The Js. are also burrowing animals, using their strong incisors for that purpose: their habits are nocturnal, and they feed on roots, seeds, insects, birds' eggs, etc., and occasionally do great damage to grain-crops. They are sometimes eaten by the Arabs. *D. hirtipes* is a well-known species; *Alactaga* is common on the Siberian steppes, *A. jaculus* being known as the jumping rabbit; *Platycercus* is distinguished by a flattened, lancet-shaped tail; *Zapus* is the so-called jumping-mouse of the U.S.A., and the genus *Sminthus*, whose legs are short and nearly equal, may be regarded as approaching most nearly to ancestral form.

Jeremiah, called also Jeremias and Jeremy, one of the greatest of the Heb. prophets, is described in the first verse of the book which bears his name as the son of Hilkiah, whom some have identified with the Hilkiah mentioned in 2 Kings xxii. He belonged to a priestly family of Anathoth, which he later quitted for Jerusalem. The vision by which he was inspired to take up the prophetic work is given in the first chapter. This took place in the thirteenth year of the reign of King Josiah (c. 627 B.C.). Five years later occurred the famous discovery of the Book of the Law by Josiah, which led to that prince's great attempt at reform. In this J. does not figure at all, though there is no reason to suppose but that he was in full sympathy with it. But it was not long before the prophet began to feel that no great or deep reformation could be carried out by the secular arm, and it was this that led him to take up the individualistic attitude which marks him off from the other prophets. His prophecies were spread over the reigns of Jehoahaz, Jehoiakim, Jeconiah, Zedekiah, and part of the period of exile. The book of J., which is interspersed with accounts of historical incidents relating to general events and the life of J. himself added by a later hand, is tender and sad throughout. The prophet insists that the spiritual well-being of the chosen people is not bound up with their prosperity as a nation, and that only through defeat and oppression can the remnant be saved. He insists on the necessity of a spiritual religion and warns the readers that the possession of the temple of the Lord God will not secure them from defeat. He insists that the work of the Chaldean will be accomplished not by succouring but by oppressing Israel. On account of the pessimism and, as was thought, lack of patriotism shown in his prophecies, J. was extremely unpopular and had to submit to much persecution. His book, which he had prepared with the

aid of his friend Baruch, was cut to pieces and burnt, and he himself had to submit to frequent imprisonment under the most revolting conditions. After the capture of the city he received permission to dwell where he wished, and so attached himself to Gedaliah, the Babylonian governor. On the death of Gedaliah, he retired to Egypt, where tradition says that he met his death by stoning at the city of Tahpanes. See expositions by G. Ewald, A. Graf, T. Cheyne, C. Ball, L. Elliott-Blinns, 1919; G. A. Smith, 1929; see also W. H. Bonnett, *The Book of Jeremiah* (Chaps. xxi.-lxi.), 1891; and J. McAdyen, *Jeremiah in Modern Speech*, 1919.

Jérémie, seaport in the is. and republic of Haiti, 119 m. W. of Port-au-Prince, has important trade in cocoa, coffee, and logwood. The father of Dumas, the Fr. novelist, was b. here. Pop. 7000.

Jerez de la Frontera (formerly Xeres), tn. of S. Spain in the prov. of Cadiz, situated on a vine-covered plain 12 m. N.N.E. of Cadiz. The tn. is chiefly famous for its vines from which sherry is manufactured. Indeed, the wine lodges are a characteristic feature of J., but there are other buildings of note, the fifteenth-century church of San Miguel, a tn. hall dating back to the seventeenth century, etc. Under the walls of J. the battle of Guadalete, which delivered Spain into the hands of the Moors, was fought in 711, and parts of the old walls still remain. The tn. was taken from the Moors by Alfonso X. in 1265. Pop. 90,600.

Jerez de los Caballeros, tn. of Estremadura, 40 m. S.E. of Badajoz, Spain, is the centre of an agric. dist. producing grain, fruit, vegetables, and cork. The main wealth of the people consists of herds of swine and mules. Pop. 12,000.

Jerfalcon, Gyrfalcon, or *Falco gyrfalco*, name of a species of falcon (*q.v.*) belonging to the Falconidae; it is found in W. Russia, Scandinavia, Greenland, and Arctic America, and its colour varies from grey to white.

Jerichau, Jens Adolf (1816-83), Dan. sculptor, was a pupil of Thorvaldsen. He was commissioned to carve a trioso for the royal palace of Christiansborg, near Copenhagen, and this piece of work, which was finely executed, estab. him in high repute. Among his best classical studies are: 'Heracles and Hebe,' 'Penelope,' and the 'Wedding of Alexander.' His religious subjects include 'The Resurrection,' 'Adam and Eve,' and a figure of Christ. J. also made a portrait statue of Ernest.

Jericho, once an important city of Palestine in the Jordan Valley, 15 m. N. E. of Jerusalem. The site of the old city was in the midst of a fertile dist. where palms, rose trees, rainns, and balsams grew in profusion. According to the Bible narrative and other accepted authorities, the tn. was captured by the Israelites on their entry into Canaan, re-fortified by Hiel the Bethelite, destroyed under Vespasian, and rebuilt under Hadrian. Antony is said to have given its groves to Cleopatra, and Herod the Great dwelt there. In ant. times J. held

a fairly important position strategically, dominating the chief trade routes of antiquity from Jerusalem towards the E. But it was too isolated to be able to rely in an emergency on the help of friendly cities, and consequently it was, from a very remote age, surrounded by defensive walls; and both hist. and archaeology agree that the city was frequently destroyed. Early in this century, Ger. excavators discovered the defensive ramparts of the old city of J., and their evidence, including the traces of destruction and of fire, seemed to corroborate the Biblical story. Further investigation in

the wall are found burned to the ground, their roofs fallen upon the domestic pottery within.' All these facts give strong support to the Bible narrative, making it probable that the fallen walls of the Late Bronze Age are actually those of the city which is said to have been taken and burnt by the Israelites under Joshua. See Sir Charles Marston, *New Knowledge about the Old Testament*, 1933.

Jericho, Rose of, or *Anastatica hierochuntina*, species of Cruciferae, which also alone forms a genus. It occurs in Palestine and N. Africa, and is able to live for a long period without water.



IN THE WINE CELLARS OF JEREZ DE LA FRONTERA

1920 showed that the stone rampart was of the Middle Bronze Age (c. 1800 B.C.), but the date of the inner wall was left to be estab. by Sir Charles Marston's expedition under Dr. John Garstang, Prof. of Archaeology at Liverpool Univ. which proved that the inner wall belonged mainly to the Late Bronze Age, the period of Joshua. Cuttings made by Dr. Garstang, in June 1930, in the mound of old J.—the ruins of the walls are situated near the modern vil. El Riha (Arabic form of Jericho), on a low mound at the foot of the W. plateau—revealed that the fortifications of J. represent an almost continuous occupation, twice broken by invasion between 2000 and 1600 B.C.: at which latter date the walls were reconstructed upon the brink of the mound, and these in their turn perished in some conflagration. The W. side of the defences showed continuous signs of destruction and conflagration, the outer rampart (which is 6 ft. thick) suffering most, its remains falling down the slope. The most arresting fact disclosed by Dr. Garstang is the traces of intense fire including reddened masses of brick, cracked stones, charred timbers, and ashes. Houses alongside

Jeritz, Maria, Austrian soprano, b. at Brno, 1894. Studied piano, violin, cello, and harp. Cultivated voice when fourteen under Prof. Auspitzer of Brno. Made début as Elsa in *Lohengrin* at Olmutz, Austria, 1909. Member of Imperial and Royal Opera, Vienna, 1913. Metropolitan Opera Co., New York, 1921—Amer. début as Marietta in *Die Tote Stadt*. Successful as concert singer. First Class of the Order for Meritorious Service, Austria, 1935. An Eng. trans. of her reminiscences, entitled *Sunlight and Song*, appeared in 1924.

Jeroboam I., son of Nebat, was the first king of Israel after its separation from Judah on the death of Solomon. He was made Solomon's tax-gatherer in his own dist. of Ephraim, but the suspicion that he was about to raise a rebellion caused him to make a hasty flight into Egypt. On Solomon's death he returned and headed the embassy to Rehoboam, asking for a lightening of the taxation. On the young king's refusal, he led the revolt of the ten tribes, and was made their king (see ISRAEL). His erection of golden calves for worship at Bethel and Dan led to his name becoming a byword in

In the nineteenth century, ship-building, sea-faring, and overseas trading—and in earlier days, privateering—were the is.'s mainstay. These activities have disappeared and the is. is now dependent upon agriculture, mainly for export, and upon seasonal tourist traffic. Import trade is substantial and is done almost entirely with the United Kingdom.

Early potatoes and tomatoes, both grown outdoors and often in succession in one season, are the main export crops. Pre-war annual exports, entirely to the United Kingdom, averaged about 60,000 tons of potatoes and 25,000 tons of tomatoes, and 53,000 tons of granite, of an aggregate value of about £2 millions. Tomato exports to the United Kingdom in 1947 reached a record of 44,550 tons valued at £2½ millions. Some 1000 head of cattle are exported each year, mainly to the United Kingdom and the U.S.A., also to Australia and New Zealand. The normal cattle pop. of the is. numbers about 10,000. The J. breed of cattle is remarkably free from disease and the high yield of milk and its high butter fat content is unsurpassed. Breeding standards are maintained by the breeders' organizations. The animals lose some of their peculiar characteristics after four or five generations have been bred overseas, and this ensures a recurring demand for cattle from the is.

J. has some peculiarities of fauna, also much archaeological interest, notably megalithic tombs, the finest being La Hougue Bie. See A. Saunders, *Jersey, 1642-1900*, 1930-33; Ward, Lock, and Co. (pub.) *Guide to the Channel Isles*, 1934; G. R. Bailleine, *A Bibliographical Dictionary of Jersey*, 1948.

**Jersey Breed**, see under CATTLE.

**Jersey City**, co. seat of Hudson co., New Jersey, U.S.A. At the N. the Hudson and Hackensack Rr. make it almost an is., whilst southward it is flanked by New York and Newark bays. It is separated from New York by 1 m. of riv., and connected with it by sev. lines of ferries, the Hudson R. tunnels, and recently by the vehicular tunnel which was opened in 1928. It is the E. terminus of many railways, and has spacious docks along its 12 m. of water frontage. Possesses many tobacco, rubber, and sugar-refining factories, crucible works, foundries, boiler works, and factories making rolling stock, motor cars, and wireless apparatus. It has large stock-yards, and enormous numbers of sheep and cattle are slaughtered for New York and other mkt.s. It has a free library with more than 100,000 books. Education is well provided for in many public schools, the Haskins Institute, St. Peter's College, St. Dominic's Academy and St. Mary's Academy. Paulus Hook occupied the site till 1820, when the city of Jersey was incorporated. The pop. has increased rapidly and reached 301,300 in 1940.

**Jersey Shore**, settlement on the W. fork of the Susquehanna R. in the Lycoming co. of Pennsylvania, U.S.A. There are silk mills, cigar factories, foundries, etc. The dist. is agric. Pop. 5400.

**Jerusalem**, city of Judaea, and cap. of Palestine, of which country it constitutes a separate div. for purposes of administration, situated 31° 46' N. lat., and 35° 13' E. long. It stands on a plateau formed of two hills, and bounded both E. and W. by valleys, that on the E. being the brook Kidron referred to in the N.T. To the N. there are also two valleys. The generally exact idea of the geography and geology of J. is due to a succession of investigations which commenced in 1833. After that time the work continued under various investigators, of whom the most prominent were De Vogüé (1860-63), Capt. Wilson, R.E. (1866), Capt. Warren, R.E. (1867-70), and Lieut. Conder, R.E. (1872-75). Still more results have been obtained by the Palestine Exploration Fund, which commenced operations in 1894, and a great impetus was given to the work after the First World War, especially through the activities of the Brit. School of Archaeology in J. In the period 1910-30 the chief excavations in the vicinity of J. were those of Parker in 1911, Well in 1913 and 1923, Macalister and Duncan in 1923-25 and by Crowfoot in 1927-28, all of Ophel, the hill to the S.E. of the city, and the topographical data from these excavations are of value as establishing the position of the City of David, and also as indicating, though not finally proving, that some of the rock-cut caves may formerly have been used for royal tombs. Excavations at the Citadel at the Jaffa Gate, so conspicuous a feature of the Walled City, have proved that the massive tower commonly called the Tower of David is really the Tower of Phasael, one of the three erected by King Herod about 25 B.C. as defences for his citadel and palace, and that it was inserted in a pre-Herodian wall on the N.W. corner of the anc. city, a large section of which has been uncovered running across the Courtyard of the present Mameluke Citadel. Excavations in 1916 tend to confirm doubts which had arisen as to previously accepted beliefs about the extent of the first J. estab. In the time of the Heb. monarchy about 1000 B.C. to 587 B.C. The hill on which the Citadel stands is traditionally known as Mt. Zion, but the excavations do not support the theory that a part of the 'Stronghold of Zion,' the City of David and his successors, was located on that hill. Researches at the Walling Wall go to show that the boundaries of this celebrated relic coincide with those of the platform of the temple of Solomon, of which courses of stone are supposed to be in existence below the surface. Each of the two hills which form the site of the city is a natural fortress, for the two are divided by a deep valley (the Tyropoeon), and it is probable that from the earliest times they were so used. The lack of water must, however, have proved a serious disadvantage. The 'Virgin's Spring' in the Kidron valley, and just outside the old city wall, is the only spring near the city, and there is but one important well within. The water in the Pool of Siloam is brought from the Virgin's

Spring by a rock-cut aqueduct, running through the old Ophel wall. The Temple (comprising the dist. now known as the Haram) was built on the E. hill. On the W. hill was built the upper city.

The chief monuments of interest to visitors are the Church of the Holy Sepulchre (q.v.), with remains of the basilica of Constantine, the Walling or W. Wall; the Mt. of Olives, the Tomb of David (Cenaculum); the Crusaders' Church of St. Anne; the Jewish Tombs in the Valley of Jehoshaphat, the Armenian Cathedral;

the Ger. Catholic Church outside the Zion Gate; the It. Hospital, designed like a Florentine palace; the Lutheran Church of the Muristan, and the fine Heb. Univ. (modern) with superb sculptures by Eric Gill. The walled city of J. is entered by seven gates: the Jaffa ('Gate of the Friend'), New, near Allenby Square; Damascus ('Gate of the Column'), N. wall, Herod's ('Gate of Flowers'), N. wall, St. Stephen's ('Gate of Our Lady Mary' or 'Gate of the Tribes'), E. wall, Dung ('Gate of the Moors'), S. wall



JERUSALEM AND THE MOSQUE OF OMAR.

Paul Popper

the Ecce Homo arch, the Church of the Tomb of the Virgin, and the Garden of Gethsemane. 'The old city within the walls, that city 'compact together' with its vaulted *souqs* (bazaars) and narrow streets, that have undergone no change for centuries, with its steep alleys flanked in many cases by masterpieces of Saracenic architecture, may well, however, be regarded as the greatest monument of all, unique in its compactness, in its appearance of hoary antiquity, and in that homogeneity which it is the aim of its present administrators (then the British mandatory gov.) jealously to preserve (H. C. Luke and E. Keith Roach, *Handbook of Palestine and Transjordan*, 2nd ed. 1930). Of new buildings some of the most striking are the Anglican Cathedral and Close of St. George, built by George Jeffrey, the Franciscan Basilica in Gethsemane,

and Zion ('Gate of the Prophet David'), S. wall, on Mt. Zion. The Golden Gate, built in the fifth century on the Hasm. enclosure, was walled up by the Turks soon after they occupied Jerusalem in the sixteenth century.

J. has greatly altered in appearance since the First World War, and continued to develop throughout the Brit. mandatory régime. Some of the suburbs have the aspect of bustling towns. In the W. States of America; while new streets are being made and new districts opened up. There are also electric tramway and motor bus services. There are big banks and commercial houses, and new premises on a far more modern plan than those of even a few years before have replaced the latter. It is estimated that more than two-thirds of the pop. of J. dwell outside the walls of the city, though later than the middle

of last century there was not one building outside the eight gates of the city walls. But to-day hotels, large stores, and commercial buildings generally have been opened up outside the city proper, and with this development have come the garden cities. This greater J. has now spread half-way to Bethlehem to the S., to Mt. Scopus to the N. (the site of the Brit. cemetery), and to the W. nearly to Ain Karim, the bp. of John the Baptist. Extension eastward is impossible, because there the land falls steeply into the Kidron Valley. Altogether more than seventy-five streets have been laid out in these new suburbs, with such names as Isalah St., John the Baptist St., Herod's Way, Hezekiah St., and so forth, all of course being drawn from Biblical hist. Development has been on sound tn.-planning lines. The municipality has control over all building operations, and from the outset (1914) it was recognised that J. demanded specialised treatment, so that W. European architectural ideas should harmonise with an E. environment and E. conditions. The beauty of the buildings of J., considered apart from their sanctity, lies largely in the colour and texture of their stone, which, after centuries, has mellowed to a golden grey. It blends in a remarkable manner the walls and gateways of the Old City, the towers of its many churches and monasteries, the modern commercial buildings along Princess Mary Avenue, and the villas of Rehavia and Qatamon. One of the aims of the Palestine Gov.'s tn.-planning commission under the mandatory régime was to maintain this unity of character throughout the fast developing city by insisting on the use of stone for all buildings. The ubiquity of stone was threatened by the use of concrete, providing an instance of a W. technique, introduced by Jewish immigration, which conflicted with the traditional way of life. The account which Britain can give of her stewardship in respect of tn. planning in J. is one of which any administration might be proud. The successive measures of the Brit. planners during the thirty years of mandatory rule were directed to one or other of two objectives: the preservation of the Old City and the encouragement of high standards, hygienic, social, and æsthetic, in the modern city, which during those thirty years, had fast been growing up around it. A proclamation was made by Lord Allenby as military governor in 1918 forbidding the erection, demolition, or alteration of any building within a 2500 metre radius of the Damascus Gate without a written permit, and this was only granted for building with an approved purpose (which excluded industrial building) and was subject to control of height and building material. Four zones were defined: the Old City, which was to retain its medieval aspect and within which the traditional stone construction with vaulted roofs was advocated for any necessary rebuilding; the area immediately outside the city walls, where undesirable recent structures were to be demolished and new building pro-

hibited: the area to the N. and E. of the Old City where new building was to be strictly controlled; and the area to the W., where development was to be encouraged. The plan of future roads and open spaces in this zone was also indicated. The later development of J. to the W. was thus largely determined in those early days. In particular the present freedom from building in the Mt. of Olives region to the E. of the Old City which came within the third zone, is due first to the steps taken by the Brit. authorities and to the support of the Pro-Jerusalem Society. In 1930 the first complete tn.-planning scheme came into operation. An amplification of the Allenby provisions further safeguarded the Old City, and for the new tn., which covered an area nearly twenty times as large, detailed road plans were made and use-zones proposed for the areas to the N., W., and S.W.; and restrictions were placed on the permissible built-up area in order to secure some form of density control. An archaeological area was defined, within which all building work had to conform to an Antiquities Ordinance. Certain defects of zoning and density in the 1930 scheme were remedied in 1941. This amended version of the scheme dealt with communications and instituted a classified road system, including an arterial ring road, besides dealing with overcrowded areas and open spaces. All these measures were codified in the Tn. and Country Planning and Building Ordinance, 1947.

The building of Greater J. extends nearly as far as the Well of the Magi. Here the residences (and also those at Bethlehem itself) are especially handsome many of them having been built by native craftsmen who had learned their trade in the U.S.A. and returned to Palestine as wealthy men. It is estimated that some 23,000,000 was spent between 1925-30 on the erection of private dwellings in Greater J., while over 2250,000 was spent upon the handsome King David Hotel. On July 22, 1946, an entire corner of the hotel was destroyed by bombs of Jewish terrorists. Military headquarters in Palestine and the prin. secretariat office, with the exception of that of the High Commissioner, were located in the building and over fifty persons were killed, including several senior Gov. officials. The most attractive of the garden cities are Janine and Beth-Hakerem, while the new Arab colony of Tahlivah, S.W. of the city, has replaced what a few years ago was a waste, bearing a few olive trees. The largest and best known of the garden cities is the Talpith, lying S. of the city on the Bethlehem road, which has been developed by the Palestine Land Development Company, and contains besides hundreds of stone dwellings—all detached and conspicuous for their balconies, arched windows, large verandas, striking roofs, and fine gardens—a tn. hall, baths, synagogue, theatre, and indeed all the amenities of an independent tn. community. Some of the most important public or commercial buildings completed in recent years in J. or outside the old city are the

Heb. Univ., opened by Lord Balfour in 1925, the new library on Mt. Scopus, containing the largest collection of Heb. books and papers in the world, the Pontifical Biblical Institute, the College of Jerra Santa, the Rothschild (Ifadassah) Univ. Hospital on Mt. Scopus (designed by Eric Mendelsohn), the General Post Office (designed by Austin Harrison who designed Nuffield College), a good blend of W. functional ideas with E. motives, and the Anglo-Palestine Bank. J., being a Holy City for three Faiths, is the seat of a number of Prelates and religious bodies. There are three Christian Patriarchs, Orthodox, Lat., and Armenian having the style of 'Beatitude,' and, in addition to the Anglican Bishop in J., a Jacobite and a Coptic Bishop.

For long it was thought that the name of J. was given to the city after its conquest by David, but this judgment has been reversed by the discovery of the Amarna tablets (c. 1400 B.C.) in 1890. Here the name occurs in the form *Urusalim*, some 500 years before the time of David. The derivation has been variously derived from Heb. forms meaning 'the city of peace,' 'possession of peace,' 'foundation of peace,' 'city of the god Salim,' etc. In the Book of Joshua it is spoken of as *Jebus*, with the explanatory note 'which is Jer.' and an account is given of Joshua's assault on it. It soon fell back, however, into the hands of 'the stranger,' and it was not until the time of David that it was permanently captured and made the seat of the regal gov. (see *DAVID*). This occurred at the beginning of the tenth century B.C. For its hist. down to its destruction in the time of Zedekiah, see *ISRAEL*, where is also given an account of the attempts to rebuild it under Ezra and Nehemiah, of the various foreign powers under whose dominion it successively came, and of the factions with which the city was torn, until the time of its utter destruction by Titus, the Rom. general. It was not long, however, before the city was rebuilt, though on a smaller scale, by the Emperor Hadrian, and the new name of *Ælia Capitolina* was given to it. During the first few centuries it passed through a period of tranquillity, but it again came into prominence as the habit of pilgrimage to sacred places grew up, and as spot after spot associated with events in the life of Christ were identified by revelations made miraculously to individuals. Many great churches were erected, of which the first was Constantine's Church of the Anastasis (336) near the Holy Sepulchre. The Church of St. Stephen and many other eccles. buildings were erected by the Empress Eudocia from about 150 onward, and Justinian built the Church of St. Mary, which later formed part of the Mohammedan mosque el-Aksa. In 614 the city was taken by Chosroes, the Persian, and most of the churches were destroyed. It was recaptured by Heraclius in 627, but lost again nine years later, to remain in the hands of the Moslems until 1099. At the beginning of this period the mosque el-Aksa was erected

on the site of the Jewish temple. In 1099 the city was taken by Godfrey of Bouillon and his knights, thus returning once more into Christian hands. But the Lat. kingdom of J. was not long-lived, nor was it by any means stable during its continuance. It fell in 1244, after having been for a short time in the hands of the ex-communicate Frederick II., to whom it had been ceded by treaty in 1229 after having been captured by the Moslems. From 1244 until 1917 J. remained in Moslem hands, and during this period its hist. was comparatively peaceful and uneventful. It passed into Turkish hands in 1517, and remained under Turkish rule until the First World War of 1914-18, when it was taken by Gen. Allenby. Allenby advanced on J. in Oct. 1917. After cutting the Jaffa-Jerusalem railway at Ludd and el Karieh, he occupied Jaffa on Nov. 16 and then began a movement to surround J., advancing on it from N., S., and W. All the Turkish positions round the Holy City were carried by storm, and thereafter the city was surrendered, on Dec. 9, without further resistance, thereby ending the Turkish domination of seven centuries. The full story of the brilliant capture of J. will be found in the *Record of the Advance of the Egyptian Expeditionary Force*, compiled by Lt.-Col. H. Pirie-Gordon, 1919. On his official entry Allenby made it known by proclamation that 'every sacred building, monument, holy spot, shrine, traditional site, endowment, pious bequest, or customary place of prayer, of whatsoever form of the three religions, would be maintained and protected according to the existing customs and beliefs of those to whose faiths they were sacred.' The condition of the city in Dec. 1917 is difficult to imagine when it is seen to-day. There were no sanitary arrangements in the old city, and the water supply came from private rain-fed cisterns; but the Brit. military authorities not only placed ample sanitary services at the disposal of the Governorate, but patrolled the Via Dolorosa to keep it free from pollution, and ordered a piped water supply to be installed. The inhabs. were not slow to appreciate that, whereas the Turks had left the city as to its water supply somewhat worse than it was when they first occupied it in the sixteenth century, the Brit. had in a few months given the city a supply on modern lines, and largely independent of the weather. From 1920 onwards there were sporadic outbursts against the Jews on the part of the Arabs, especially in 1929—the Walling Wall riots—and from 1936-38, when underground Arab revolt against the Jewish immigration and the National Home, threatened the whole country (see further *UNDER PALESTINE; WALLING WALL*). The pop. which has greatly increased from immigration under the Mandatory régime, was 62,700 in 1922, 127,000 in 1939, and 155,000 at the end of 1944 and 161,440 (99,320 Jews) in Dec. 1946.

Towards the end of 1945 the Brit. gov. announced the setting up of a joint Anglo-Am. enquiry into the conditions of European and Palestinian Jewry. The

institution of this enquiry displeased the Zionists and was followed by terrorist outrages organised by Irgun Zvi Leumi, the 'Stern Gang,' and Haganah, although disowned by the Jewish Agency. Many outrages were perpetrated in J in 1946-47. With the ending of the Brit. mandatory régime in May 1948 war broke out in Palestine between the Arabs and Jews. It was hoped that a truce would protect J. and the holy places, but in fact the war actually began in J. itself, when the Arab Legion from Transjordan shelled the Jewish quarters of the city and the Jews occupied various institutions from which they fired on the Holy City and attacked

mediator, Count Bernadotte, in June; but in the meantime the Anglican Cathedral of St. George was severely damaged by shell fire (June 5). The roof was wrecked, the pulpit and most of the windows destroyed, and there was much interior damage. Two days later the main dome of the Church of the Holy Sepulchre was penetrated by a mortar-shell fired from a Jewish position outside the City wall.

According to the decision of the United Nations the City of J. with its surrounding towns and vills and all the Holy Places is to be part neither of the Arab nor the Jewish State, but is to be administered by an



THE WAILING WALL, JERUSALEM

*Canadian Pacific*

J. generally. Churches, convents, and religious and humanitarian institutions were made targets for cannon and rifle fire, and some of these buildings were destroyed. Buildings occupied by the Jews included the Orthodox Gk. Convent of St. George, the convent of Notre Dame de France, the Fr. and It hospitals, etc.—all of which were occupied by Jewish forces on May 14-15, i.e. the date of the ending of Brit. rule. Shells were also fired into the Holy places from the Heb. Univ. and the Hadassah Hospital on Mt. Scopus. The convent of Notre Dame de France was largely destroyed. The Orthodox Armenian Convent received hundreds of shells fired by the Jews from the Benedictine Convent on Mt. Zion. According to a protest circulated by the Lat. Patriarch to the Union of Christian Communities in Palestine most of the shells falling on the Holy Sepulchre and other Christian institutions were Jewish. In the same statement it was declared that the Arabs had respected holy places, churches, convents, and Red Cross institutions. A truce was arranged in J. soon after the arrival of the United Nations

International Trusteeship system. A special committee of the United Nations has completed its draft of a constitution for the Holy City and its report has been submitted to the Trusteeship Council. But as late as the summer of 1949 the problem of the control of J. had not been settled though some progress had been made through the good offices of the committee of the Palestine Conciliation Commission of the United Nations. It then seemed to be agreed, unofficially between the Jews and the Arabs, that a partition plan which should be acceptable to the United Nations and the various religious faiths interested was the only practical solution. It was believed that the plan could be carried out without detaching J. either from Israel or the gov. which would eventually represent Arab-held Palestine. The plan, still in its early stage, was as follows: the city would be divided into two parts for the purposes of administration, although the frontier would run round the city rather than through it. The holy places would be controlled by the United Nations agency. Access to them would be guaranteed to all creeds and both govts.



would be responsible for their security and that of the pilgrims.

See also under PALESTINE. See G. Le Strange, *Syria and the Holy Land*, 1890; Sir C. Warren, *Underground Jerusalem*, 1876; various publications of the Palestine Exploration Fund; Sir O. M. Watson's *Jerusalem*, 1912; George Jeffroy, *A Brief Description of the Holy Sepulchre, Jerusalem, and other Christian Churches in the Holy City*, 1919; H. Duckworth's *The Church of the Holy Sepulchre*, 1922; C. R. Ashbee, *Jerusalem*, 1924; E. Reynolds-Ball, *A Practical Guide to Jerusalem and its Environs*, 1925; *Jerusalem Nouvelle* (Paris), edited by Vincent and Abel, 1922-26; H. C. Luke and E. Keith-Roach, *The Handbook of Palestine*, 1934; E. L. Sukenik, and L. Mayer, *Third Wall of Jerusalem*, 1930; H.M.S.O., *Jerusalem city plan: preservation and development during British Mandate, 1914-18, 1948*.

**Jerusalem Artichoke**, or *Helianthus tuberosus*, well-known species of Compositae, closely allied to the sunflower, which is cultivated on account of its edible tubers. It is indigenous to Brazil, and its specific name is misleading, having arisen from the corruption of the It. word for a sunflower, *zucca girasole*.

**Jerusalem Chamber**, part of the deanery in Westminster Abbey, was originally the abbot's parlour, part of the abbot's house. It probably received its present name from the tapestries of the hist. of Jerusalem which formerly adorned it. The name is also noteworthy on account of its connection with the death of Henry IV., as narrated by Fabian the chronicler (cf. Shakespeare's *Henry IV.*, pt. 2, iv. 4). The chamber was restored in 1624, and here the Assembly of Divines met in 1643. In later times it was the scene of the labours of the revisers of the A.V. of the Bible (version of 1881). The crown is lodged here on the night before the coronation. The chamber is 36 ft. by 18 ft. and the panelling is of the time of Henry VIII.

**Jervaulx Abbey**, ruin of an anct. Cistercian monastery which was once a great centre of life for the hamlet of Jervaulx, in Yorkshire, England. What is left of the cruciform church, the cloistral court, chapter house, and refectory, etc., belongs to the Transitional Norman or Early Eng. period. The last abbot was hanged in 1537, because he was implicated in the Pilgrimage of Grace.

**Jervis, John** (1734-1823), admiral, fought in Keppel's action of 1778. He received the Order of the Bath after seizing the Fr. ship *Peyase* in 1782, and took part, during the same year, in the relief of Gibraltar by Lord Howe. In the course of the war with France at the time of the Revolution, he took possession of the W. Indian Is. of Martinique, Guadaloupe, and St. Lucia. In 1797 he ventured as admiral to close with the Sp. fleet off Cape St. Vincent in spite of tremendous odds; the result was a brilliant victory, in which Nelson participated. In the Addington ministry he served as First Lord of the Admiralty, but his somewhat drastic pro-

posals of reform and his rigid economies proved an unpopular policy.

**Jorvis Bay**, eighteen-year-old pleasure liner which was transformed during the Second World War into an armed merchant cruiser. She was unarmoured; her seven anct. 6-in. guns were kept there to guard convoys. She will live in naval annals for her gallant action on Nov. 12, 1940, against the powerful Ger. pocket battle-ship *Admiral Scheer*, in which she saved thirty-four of a convoy of thirty-eight ships when they were attacked without warning by the Ger. ship. The J. B. sailed out against the battleship alone. Her object was not the hopeless one of sinking the *Admiral Scheer*; there was no hope even of inflicting material damage. The object was to gain time to give the convoy a reasonable chance of escape. This the J. B. and its crew achieved after a two-hour's fight. Her death roll was 190. Some 65 survivors were rescued, the ship being sunk. Her captain, E. S. Fogarty Fegen, R.N., was awarded a posthumous V.C.

**Jeshurun**, 'a poetical name for the people of Israel' (Cheyne). The exact origin of the name is uncertain. It has also been suggested that it is used not for Israel only, but for righteousness, the ideal of Israel. It occurs in Is. xlv. 2; Deut. xxxii. 15, and xxxiii. 5 and 26.

Jesi, see IESI.

**Jesmond**, see under NEWCASTLE UPON TYNE.

**Jessamine**, see JASMINE.

**Jesse, John Heneage** (1815-71), Eng. historian, a clerk in the Admiralty, after endeavouring to write poetry, turned his talents to the field of historical memoirs. In 1840 he pub. *Memoirs of the Court of England during the Reigns of the Stuarts*, and, encouraged by the reception of this work, followed it with others of a like nature, the best of which dealt with the *Life and Reign of George III* (1862). His most valuable contribution to literature was *George Selwyn and his Contemporaries* (1843).

**Jessel, Sir George** (1821-93), Eng. judge, b. and d. in London, was of Jewish extraction. He was called to the Bar in 1847, made a Q.C. in 1855, and entered Parliament in 1868, as a Liberal. He became Solicitor-General, was knighted, and made privy councillor and Master of the Rolls in 1873.

**Jesse Window**, window, especially common in the Middle Ages, which had designed upon it the genealogical tree representing the genealogy of Christ from 'the root of Jesse' (Is. xi.), father of David. There are examples at Wells, Chartres, the choir of Dorchester Abbey, Oxfordshire, Downside Abbey, Leicestershire, and St. George's, Hanover Square, London.

**Jessore**, or **Jessor**: (1) Dist. in W. Bengal, India, has an area of 2925 sq. m. It is a well-watered, fertile plain, cultivated, and producing quantities of rice, sugar, oil seeds, jute, and tobacco. Pop. 750,000. (2) A tn. and cap. of the above dist., 66 m. N.E. of Calcutta; has manufs. of bricks, bamboo work, mats, and coarse textiles. Pop. 12,000.

Jessukmir, see JAYSALMIR.

**Jest-books.** There are two kinds of J. — compilations of witty sayings and practical jokes ascribed to some particular wit to ensure their sale and popularity, and collections of *facetiae* admittedly brought together from various sources. The monkish raconteurs of the Middle Ages doubtless brought and spread many tales from the E., but numbers of typical jests and practical jokes probably existed independently throughout all countries and races of mankind, allowing for slight local changes. Among famous J. may be mentioned: *Tarleton's Jestes: a Hundred Merry Talys* (c. 1525, first extant edition, 1611); *The Witty and Entertaining Exploits of George Buchanan, commonly called the King's Fool* (Buchanan long being famous rather as a humorist than a humanist); *Joe Miller's Jest-Book, or the Wit's Vade Mecum* (1739, really compiled by John

Mottley, 1692-1750). Other similar collections are the *Jests of Scogin*, by 'A. B. of Physicke Doctour,' 1613; *Tales and Quick Answers, very Merry and Pleasant to Read* (about 1535); John Taylor, *Wit and Mirth*, 1629, more original than most; and *Wit and Drollery*, 1661, by 'The most refined wits of the Age'; *Merry Drollery*, 1661; and *Westminster Drollery, or a choice collection of the newest Songs and Poems both at Courts and Theaters*, by 'A Person of Quality,' 1671 (reprinted by Roberts of Boston), of the Cavalier period. See CHAPBOOKS; FOLKLORE; GOTHAM, TALES OF THE MAD MEN OF. See W. Hazlitt, *Shakespeare Jest-Books*, 1875, *Studies in Jocular Literature*, 1890; *The Literature of Roguery* (in *Types of English Literature*), 1907; W. Jerrold, *Book of Famous Wits*, 1912; F. Kirkman *The Wits*, 1932.